Acute hyperoxia induces systemic responses with no major changes in peripheral tissues in the Senegalese sole (Solea senegalensis Kaup, 1856)

Senegalese sole Solea senegalensis is currently farmed in recirculation aquaculture systems that often involve water reoxygenation, which in turn may cause acute or prolonged hyperoxia exposures. In order to understand the impact of acute hyperoxia on the fish immune system and peripheral tissues such as gills and gut, Senegalese sole juveniles (30g) were exposed to normoxia (100% O2sat) as control and two hyperoxic conditions (150 and 200% O2sat) and sampled at 4 and 24 h. Fish haematological profile, total and differential blood cell counts and plasma immune parameters were analysed. Histomorphology and immunofluorescence analyses of gills and intestine were performed, respectively, whereas head-kidney samples were used for assessing the expression of immune-related genes. Results indicate that acute hyperoxia exposure may reduce fish erythrocyte and haemoglobin levels. Moreover, decreases in total leucocytes numbers, circulating lymphocytes, monocytes, alternative complement pathway activity and expression of cyclooxygenase-2 were observed in fish exposed to hyperoxia. In contrast, hyperoxia did not induce major effects on gill histomorphology nor in the protein content of ion and glucose cotransporters as well as a macrophage marker (V-ATPase) in the intestine. Although the activation of humoral mechanisms and immune-related genes were not dramatically affected by acute hyperoxia, the compromised immune cell status and the reduction of some inflammatory indicators are issues to consider under acute hyperoxia conditions.
Behavioural changes of Atlantic cod (Gadus morhua) after marine boulder reef restoration: Implications for coastal habitat management and Natura 2000 areas

While marine reefs are degraded globally, the responses of fish to marine reef restoration remain uncertain, particularly in temperate waters. This study measured the effect of marine boulder reef restoration on the behaviour of Atlantic cod, Gadus morhua L., in a Natura 2000 area using acoustic telemetry. Cod were tagged and released in the study area before and after the restoration and tracked continuously for six months. A larger fraction of the released fish remained in the study area after restoration (94%) than before (53%). Moreover, throughout the study period, cod spent significantly more hours per day and prolonged their residence time in the study area after the restoration. The study indicates that marine reefs subjected to boulder extraction can be restored and function as favourable cod habitats. Temperate marine boulder reef restoration represents a valuable management tool to improve habitats for temperate fish species.
Effect of nanosilver on metabolism in rainbow trout (Oncorhynchus mykiss): An investigation using different respirometric approaches

Nanosilver (nAg) has been incorporated into many consumer products, including clothing and washing machines, because of its antimicrobial properties. Consequently, the potential for its release into aquatic environments is of significant concern. Documented toxic effects on fish include altered gene expression, gill damage, and impaired gas exchange, as well as mortality at high nAg concentrations. The present study reports the effects of nAg on the metabolism of rainbow trout (Oncorhynchus mykiss). Fish were exposed to environmentally relevant concentrations (0.28 ± 0.02 μg/L) and higher (47.60 ± 5.13 μg/L) for 28 d, after which their standard metabolic rate (SMR), forced maximum metabolic rate (MMRf), and spontaneous maximum metabolic rate (MMRs) were measured. There was no effect observed in SMR, MMRf, or MMRs, suggesting that nAg is unlikely to directly affect fish metabolism. On average, MMRs tended to be greater than MMRf, and most MMRs occurred when room lighting increased. The timing of MMRf chase protocols was found to affect both MMRf and SMR estimates, in that chasing fish before respirometric experiments caused higher MMRf estimates and lower SMR estimates. Although compounded effects involving nAg and other environmental stressors remain unknown, the present study indicates that the tested range of nAg is unlikely to constrain fish metabolism.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, University of Manitoba, Lakehead University, Fisheries and Oceans Canada
Authors: Murray, L. (Ekstern), Rennie, M. D. (Ekstern), Svendsen, J. C. (Intern), Enders, E. C. (Ekstern)
Pages: 2722-2729
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Environmental Toxicology and Chemistry
Volume: 36
Issue number: 10
ISSN (Print): 0730-7268
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.74 SJR 1.19 SNIP 1.031
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.446 SNIP 1.055 CiteScore 3
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.506 SNIP 1.129 CiteScore 2.89
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.653 SNIP 1.092 CiteScore 2.88
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.642 SNIP 1.107 CiteScore 2.81
ISI indexed (2012): ISI indexed yes
Effects of acoustic telemetry transmitters on gill ventilation rate and haematocrit levels of round goby Neogobius melanostomus

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Ecosystem based Marine Management
Authors: Behrens, J. (Intern), Svendsen, J. C. (Intern), Deurs, M. V. (Intern), Sokolova, M. (Intern), Christoffersen, M. (Intern)
Pages: 416-419
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Fisheries Management and Ecology
Volume: 24
Issue number: 5
ISSN (Print): 0969-997X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
Effects of dietary Gracilaria sp. and Alaria sp. supplementation on growth performance, metabolic rates and health in meagre (Argyrosomus regius) subjected to pathogen infection

Effects of dietary seaweed supplementation on basal physiology and health biomarkers were assessed in meagre (Argyrosomus regius) subjected to bacterial infection, using Photobacterium damselae subsp. Piscicida (Phdp) as the etiologic agent. Three test diets were prepared by supplementing a basal control formulation (44 % protein, 16 % lipid, 22 kJ g−1 energy) with 0 % seaweed (control), 5 % Gracilaria sp. or 5 % Alaria sp. During the growth trial, 180 fish (39.70 ± 0.33 g) were daily fed for 69 days with the experimental diets. After the growth trial, 60 fish from each dietary treatment were divided into two groups, infected and non-infected. The infected
group was injected intraperitoneally with a saline solution (HBSS) with 2.91 x 10^3 CFU Phdp g⁻¹ fish, whereas the non-infected group was injected with HBSS without Phdp. Dietary seaweed supplementation did not affect fish growth performance. Standard and routine metabolic rates, and aerobic metabolic scope did not vary significantly among dietary treatments. Conversely, maximum metabolic rate was significantly higher in fish fed Alaria sp. diet when compared to control group. Non-infected fish had higher hematocrit levels than the infected group, regardless of diet. Lactate levels were significantly higher in fish fed Alaria sp. diet when compared to control, with no interaction between diet and infection. Lipid peroxidation was significantly higher in fish fed control diet than supplemented diets. Infected groups had lower antioxidant enzymes activities when compared to non-infected. An interaction between infection and diet was found for glutathione peroxidase and reduced glutathione activities. The current study suggests that dietary seaweed supplementation modulates metabolic rates and biomarker responses in meagre, which may confer advantages in coping with biotic stressors.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Universidade do Porto, Polytechnic Institute of Leiria, ALGAPLUS
Authors: Peixoto, M. J. (Ekstern), Salas-Leitón, E. (Ekstern), Brito, F. (Ekstern), Svendsen, J. C. (Intern), Baptista, T. (Ekstern), Pereira, R. (Ekstern), Abreu, H. (Ekstern), Reis, P. A. (Ekstern), Gonçalves, J. F. M. (Ekstern), de Almeida Ozório, R. O. (Ekstern)
Pages: 433-447
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication Information
Journal: Journal of Applied Phycology
Volume: 29
Issue number: 1
ISSN (Print): 0921-8971
Ratings:
BFI (2018): BFI-level 1
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BFI (2017): BFI-level 1
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Scopus rating (2016): CiteScore 2.46
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.32
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.88
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.78
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.68
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 2.29
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Effects of low-oxygen conditions on embryo growth in the painted turtle, Chrysemys picta

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Iowa State University, University of Porto
Authors: Cordero, G. A. (Ekstern), Karnatz, M. L. (Ekstern), Svendsen, J. C. (Intern), Gangloff, E. J. (Ekstern)
Pages: 148-156
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Integrative Zoology
Volume: 12
Issue number: 2
ISSN (Print): 1749-4869
Ratings:
Web of Science (2018): Indexed yes
Web of Science (2017): Indexed yes
Scopus rating (2016): SJR 0.85 SNIP 1.039 CiteScore 1.81
Scopus rating (2015): SJR 1.002 SNIP 0.917 CiteScore 1.72
Scopus rating (2014): SJR 0.766 SNIP 0.837 CiteScore 1.55
Scopus rating (2013): SJR 0.817 SNIP 0.741 CiteScore 1.49
Scopus rating (2012): SJR 0.724 SNIP 0.729 CiteScore 1.49
Scopus rating (2011): SJR 0.624 SNIP 0.633 CiteScore 1.09
Scopus rating (2010): SJR 0.274 SNIP 0
Scopus rating (2009): SJR 0.122 SNIP 0
Original language: English
DOIs: 10.1007/s10811-016-0917-1

Erfaringsopsamling med kirurgisk implantering af akustiske transmittere i sortmundet kutling (Neogobius melanostomus)

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Marine Living Resources
Authors: Christoffersen, M. (Intern), Sokolova, M. (Intern), Svendsen, J. C. (Intern), Deurs, M. V. (Intern), Behrens, J. (Intern)
Publication date: 2017
Event: Abstract from Dansk Havforskmøde, Helsingør, Denmark.
Main Research Area: Technical/natural sciences

Erfaringsopsamling med kirurgisk implantering af akustiske transmittere i sortmundet kutling

General information
Evidence of cormorant-induced mortality, disparate migration strategies and repeatable circadian rhythm in the endangered North Sea houting (Coregonus oxyrinchus): A telemetry study mapping the postspawning migration

Life history theory predicts a trade-off between migration and residency where migration is favoured when it infers elevated fitness. Although migration to more favourable environments offers higher growth rates, migrants often experience increased mortality due to predation. Here, we investigated mortality and migration behaviour of the North Sea houting (Coregonus oxyrinchus), an anadromous salmonid endemic to the Wadden Sea. We used acoustic telemetry to map the migration of the only remaining indigenous population by applying stationary hydrophones combined with manual tracking. Data suggested a total mortality of 26%, with 30% of the total mortality attributed to predation by great cormorants (Phalacrocorax carbo sinensis), highlighting that North Sea houting conservation could be jeopardised by increased cormorant predation. Risk of cormorant predation was size-dependent, with smaller fish suffering higher risk of predation. The study found North Sea houting to exhibit disparate migration strategies and identified a lentic area in the estuary as an important habitat. Two newly established artificial lakes within the river system significantly reduced the migration speeds, possibly indicating constrained navigation through the lakes. The migration into the Wadden Sea correlated with temperature perhaps indicating osmoregulatory constraints of sea entry. Unlike most salmonid species, migration occurred both day and night. Moreover, fish exhibited repeatable individual differences in diel activity patterns, suggesting that individuals differ consistently in their migratory activity throughout the 24-hr period. Our study provides novel information on salmonid migration, which is crucial for the development of science-based conservation strategies.

General information

State: Accepted/In press
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Section for Ecosystem based Marine Management, Aalborg University, Institut National des Sciences Appliquees de Lyon
Authors: Jensen, L. F. (Ekstern), Rognon, P. (Ekstern), Aarestrup, K. (Intern), Bøttcher, J. W. (Ekstern), Pertoldi, C. (Ekstern), Thomsen, S. N. (Ekstern), Hertz, M. (Ekstern), Winde, J. (Ekstern), Svendsen, J. C. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information

Journal: Ecology of Freshwater Fish
ISSN (Print): 0906-6691
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.66 SJR 0.804 SNIP 0.885
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.022 SNIP 1.192 CiteScore 1.92
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.866 SNIP 0.994 CiteScore 1.58
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.971 SNIP 1.072 CiteScore 1.77
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.061 SNIP 1.247 CiteScore 2.05
If you can't beat them, eat them: using acoustic telemetry to develop an economically viable fishery for the highly invasive round goby (Neogobius melanostomus)

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Marine Living Resources, Section for Freshwater Fisheries Ecology
Authors: Christoffersen, M. (Intern), Svendsen, J. C. (Intern), Behrens, J. (Intern), Jepsen, N. (Intern), van Deurs, M. (Intern)
Publication date: 2017
Event: Abstract from ICES Annual Science Conference 2017, Fort Lauderdale, United States.
Main Research Area: Technical/natural sciences

Is the osmoregulatory compromise limiting invasive species?
The round goby (Neogobius melanostomus) is a benthic fish native to the brackish waters of the Black and Caspian Seas; however, it has invaded several brackish and freshwater areas in North America and northern Europe. Notably, there are no records of N. melanostomus in high salinity marine habitats and the physiological mechanisms potentially constraining the invasion into this environment are largely unknown. The gills play major roles in gas exchange and ionic regulation and it has been hypothesized that an osmoregulatory compromise impacts performance of each process. The tradeoff of the large gill exchange capacity ideal for gas exchange is greater passive ion fluxes. High ionic waters would result in greater passive ion uptake that would require greater active ion excretion. This osmoregulatory disturbance may interfere with fish invasion by disrupting the regular activity of the gills, thus modifying the usual physiological mechanisms. To examine if the osmoregulatory compromise could constrain the invasion of N.melanostomus into high salinity environments, this study compared Na+/K+ ATPase activity of metabolic phenotypes exposed to 0, 15 and 30 ppt water. Additionally, we examined variation in two important MO2 measures, standard metabolic rate (SMR) and maximum metabolic rate (MMR) when N. melanostomus is exposed to increasing water salinities. Fish with an initially higher MMR (at the control salinity - 0ppt) are likely to be more challenged by environmental stressors than fish with a lower MMR. Our results will enable a better understanding of the physiological mechanisms that may constrain invasive species in the aquatic environment

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Ecosystem based Marine Management, University of Porto, University of West Georgia
Authors: Ferreira, P. G. (Intern), Flavio, H. (Ekstern), Hacking, H. (Ekstern), Genz, J. (Ekstern), Wilson, J. M. (Ekstern), Behrens, J. (Intern), Svendsen, J. C. (Intern)
Publication date: 2017
Main Research Area: Technical/natural sciences

Lakselus kan måske komme til at udgøre en trussel mod danske bestande af vilde laksefisk

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Aarhus University
Authors: Alstrup, A. K. O. (Ekstern), Svendsen, J. C. (Intern), Jensen, L. F. (Ekstern)
Pages: 20-21
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Dyrlægen
Volume: 4
ISSN (Print): 1903-153X
Original language: Danish
Source: Findit
Source-ID: 2372287548
Publication: Research › Journal article – Annual report year: 2017

Intraspecific variation in aerobic and anaerobic locomotion: gilthead sea bream (Sparus aurata) and Trinidadian guppy (Poecilia reticulata) do not exhibit a trade-off between maximum sustained swimming speed and minimum cost of transport

General information
State: Published
Organisations: University of Porto, Fisheries and Maritime Museum, University of Copenhagen, Iowa State University
Authors: Svendsen, J. C. (Intern), Tirsgaard, B. (Ekstern), Cordero, G. A. (Ekstern), Steffensen, J. F. (Ekstern)
Pages: 13-24
Publication date: 2017
Host publication information
Title of host publication: Physiological adaptations to swimming in fish
Publisher: Frontiers Media
Editors: Planas, J. V., Palstra, A. P., Magnoni, L. J.
ISBN (Electronic): 978-2-88945-246-0
Main Research Area: Technical/natural sciences
Electronic versions:
Publishers version
DOIs:
10.3389/978-2-88945-246-0
Links:
http://www.frontiersin.org/books/Physiological_Adaptations_to_Swimming_in_Fish/1290
Publication: Research - peer-review › Book chapter – Annual report year: 2017

Møde om havørreder i Roskilde Fjord 18. november 2017

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Freshwater Fisheries Ecology
Authors: Svendsen, J. C. (Intern), Jørgensen, L. D. (Intern), Støttrup, J. G. (Intern), Christoffersen, M. (Intern), Aarestrup, K. (Intern)
Publication date: 2017
Publication information
Source/Publisher: Fiskepleje.dk
Main Research Area: Technical/natural sciences
Links:
http://www.fiskepleje.dk/nyheder/nyhed?id=5B1FF7F6-82F2-4665-B829-062CAF42B965
Publication: Communication › Internet publication – Annual report year: 2017
Movement patterns of seaward migrating European eel (Anguilla anguilla) at a complex of riverine barriers: implications for conservation

River infrastructure such as weirs and hydropower stations commonly present migrating fish with multiple potential passage routes. Knowledge of the cues fish use to navigate such environments is required to protect migrants from hazardous areas and guide them towards safe passage; however, this is currently lacking for many species. Employing high-resolution positioning telemetry, this study examined movements of downstream migrating adult European eel, Anguilla anguilla, as they encountered a complex of water control structures in one location on the River Stour, southern England. The distribution of eels across five potential routes of passage differed from that predicted based on proportion of discharge alone. Certain routes were consistently avoided, even when the majority of flow passed through them. Passage distribution was partially explained by avoidance in the vicinity of a floating debris boom. Movement paths were nonrandomly distributed across the forebay and eels moved predominantly within a zone 2–4 m from the channel walls. Understanding of avoidance and structure oriented movement exhibited by eels will help advance effective guidance and downstream passage solutions for adults.
Muligheder ved ændret mindstemål og indførelse af vinduesmål for pighvarre (Scophthalmus maximus)


General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Aarhus University
Authors: Alstrup, A. K. O. (Ekstern), Jensen, L. F. (Ekstern), Christoffersen, M. (Intern), Svendsen, J. C. (Intern)
Pages: 30-38
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Habitat
Issue number: 16
ISSN (Print): 1904-4585
Reconciling agriculture and stream restoration in Europe: A review relating to the EU Water Framework Directive

Agriculture is widespread across the EU and has caused considerable impacts on freshwater ecosystems. To revert the degradation caused to streams and rivers, research and restoration efforts have been developed to recover ecosystem functions and services, with the European Water Framework Directive (WFD) playing a significant role in strengthening the progress.

Analysing recent peer-reviewed European literature (2009–2016), this review explores 1) the conflicts and difficulties faced when restoring agriculturally impacted streams, 2) the aspects relevant to effectively reconcile agricultural land uses and healthy riverine ecosystems and 3) the effects and potential shortcomings of the first WFD management cycle.

Our analysis reveals significant progress in restoration efforts, but it also demonstrates an urgent need for a higher number and detail of restoration projects reported in the peer-reviewed literature. The first WFD cycle ended in 2015 without reaching the goal of good ecological status in many European water-bodies. Addressing limitations reported in recent papers, including difficulties in stakeholder integration and importance of small headwater streams, is crucial. Analysing recent developments on stakeholder engagement through structured participatory processes will likely reduce perception discrepancies and increase stakeholder interest during the next WFD planning cycle.

Despite an overall dominance of nutrient-related research, studies are spreading across many important topics (e.g. stakeholder management, land use conflicts, climate change effects), which may play an important role in guiding future policy. Our recommendations are important for the second WFD cycle because they 1) help secure the development and dissemination of science-based restoration strategies and 2) provide guidance for future research needs.

General information
State: Published

Original language: Danish
Source: FindIt
Source-ID: 2392464821
Publication: Research › Journal article – Annual report year: 2017
Respirometry increases cortisol levels in rainbow trout Oncorhynchus mykiss: Implications for measurements of metabolic rate
This study aimed to assess the extent to which chasing, handling and confining Oncorhynchus mykiss to a small respirometer chamber during respirometric experiments is stressful and affects metabolic measurements. The study observed increased cortisol levels in animals tested using a chase protocol and subsequent intermittent-flow respirometry, suggesting that this procedural treatment may stress animals.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, University of Manitoba, Fisheries and Oceans Canada
Authors: Murray, L. (Ekstern), Rennie, M. D. (Ekstern), Svendsen, J. C. (Intern), Enders, E. C. (Ekstern)
Pages: 2206-2213
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 90
Issue number: 5
ISSN (Print): 0022-1112
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.93 SNIP 1.035 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.895 SNIP 0.946 CiteScore 1.66
Anthropogenic impacts on marine habitats are a global problem, particularly in coastal areas. While boulder reefs in temperate waters hold high biomass and biodiversity, and may be unable to recover from anthropogenic stressors without restoration efforts, little is known about how to restore and conserve this important marine habitat. Limited knowledge is a serious impediment to projects aimed at restoring boulder reefs that have been degraded or removed by substrate extraction. In 2008, a boulder reef was restored in Kattegat, the transitional waters between the North Sea and the Baltic Sea, using differently sized boulders. The restored reef covered approximately 27,600 m² seafloor and included 100,712 tons of boulders added at depths ranging between 4 and 11 m. This paper describes methodology and lessons learned during the restoration project. Before the restoration, geological and geotechnical surveys confirmed that the sea bed could support added boulders, and high resolution bathymetric surveys provided input for the design of the reef, particularly for numerical modelling of the hydrographic and sediment transport conditions. Numerical modelling was used to derive hydrographic design conditions for boulder placements and further, to ensure that the restored reef would not affect the sea bed morphology and hydrographic conditions at a local harbour and at a protected habitat, both situated in the vicinity of the restoration area. Data on the physical structure of the restored boulder reef, collected in 2009, demonstrated that cavernous structures and shallow reef areas were restored. Moreover, data collected in 2012 confirmed the stability of the restored reef. Finally, results highlighted the importance of stakeholder mapping at the outset, appropriate timing of stakeholder involvement and ongoing consideration of stakeholder perceptions. Charting strategy and introducing a checklist for marine restoration projects, this paper outlines important considerations and methodology needed to ensure that restoration of temperate reef structures meet the objectives, without having undesirable effects on existing hydrographic and morphological conditions, including nearby coastal areas and protected marine habitats.
Sortmundet kutling (Neogobius melanostomus) spredser sig på bekostning af hjemmehørende danske arter

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Aarhus University Hospital
Authors: Alstrup, A. K. O. (Ekstern), Jensen, L. F. (Ekstern), Svendsen, J. C. (Intern)
Pages: 6-11
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Habitat
Issue number: 14
Original language: Danish
Source: Findit
Source-ID: 2355821470
Publication: Communication › Journal article – Annual report year: 2017

Udsatte pighvarrer lader til at blive i Roskilde Fjord

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State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Freshwater Fisheries Ecology
Publication date: 2017

Publication Information
Source/Publisher: Fiskepleje.dk
Main Research Area: Technical/natural sciences
Links:
http://www.fiskepleje.dk/nyheder/2017/12/pighvarrer-i-roskilde-fjord?id=ce1c2f6f-2b03-4961-8f77-55ee732b8e6&utm_source=newsletter&utm_media=mail&utm_campaign=2017_12_07_Nyhedsbrev
Publication: Communication › Internet publication – Annual report year: 2017

Conservation physiology of marine fishes: state of the art and prospects for policy

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Centre for Marine Biodiversity Exploitation and Conservation, University of Gothenburg, Universite de Bretagne Occidentale, Carleton University, Longline Environment Ltd., University of Antwerp, University of Algarve, Ruder Boskovic Institute, Glasgow Caledonian University, University of Oslo, Consiglio Nazionale delle Ricerche, Aristotle University of Thessaloniki, University of Manchester, Ministere des Peches et des Oceans, Université Montpellier II, University of Hamburg, University of Murcia, Wageningen IMARES, University of Copenhagen, Aarhus University, University of Porto, Cefas
Pages: 1-20
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Cormorant predation of the highly endangered North Sea houting in river Vidaa, Denmark

Diets supplemented with seaweed affect metabolic rate, innate immune, and antioxidant responses, but not individual growth rate in European seabass (Dicentrarchus labrax)
Konflikt mellem skarv og den udryddelsestruede snæbel

**General information**

**State:** Published

**Organisations:** National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Freshwater Fisheries Ecology, Aalborg University, Institut National des Sciences Appliquées de Lyon, Fisheries and Maritime Museum

**Authors:** Svendsen, J. C. (Intern), Aarestrup, K. (Intern), Hertz, M. (Ekstern), Thomsen, S. N. (Ekstern), Rognon, P. C. (Ekstern), Jensen, L. F. (Ekstern)

**Publication date:** 2016

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General information
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Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Fisheries and Maritime Museum
Authors: Jensen, L. F. (Ekstern), Svendsen, J. C. (Intern)
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Original language: Danish
Main Research Area: Technical/natural sciences
Publication: Communication › Book – Annual report year: 2016

Linking reproduction, locomotion, and habitat use in the Trinidadian guppy (Poecilia reticulata)

General information
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Organisations: National Institute of Aquatic Resources, University of Porto, University of California
Authors: Banet, A. I. (Ekstern), Svendsen, J. C. (Intern), Eng, K. J. (Ekstern), Reznick, D. J. (Ekstern)
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BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.72 SNIP 1.262 CiteScore 3.23
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BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.974 SNIP 1.287 CiteScore 3.16
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.809 SNIP 1.418 CiteScore 3.24
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.867 SNIP 1.427 CiteScore 3.41
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.964 SNIP 1.42 CiteScore 3.28
ISI indexed (2012): ISI indexed yes
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Main Research Area: Technical/natural sciences
Links:
http://www.fiskepleje.dk/Nyheder/Nyhed?id=8eef00f1-f20b-442c-90a4-c5b9c575d7d3
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Scopus rating (2011): SJR 2.235 SNIP 1.451 CiteScore 3.54
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Scopus rating (2010): SJR 2.282 SNIP 1.556
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.075 SNIP 1.426
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.413 SNIP 1.522
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.253 SNIP 1.547
Scopus rating (2006): SJR 2.324 SNIP 1.577
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.19 SNIP 1.67
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.462 SNIP 1.757
Scopus rating (2003): SJR 2.398 SNIP 1.796
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Scopus rating (2001): SJR 2.211 SNIP 1.687
Scopus rating (2000): SJR 2.041 SNIP 1.435
Scopus rating (1999): SJR 2.119 SNIP 1.426
Original language: English
DOIs:
10.1007/s00442-015-3542-9
Publication: Research - peer-review › Journal article – Annual report year: 2016

Marin fiskepleje – Forskning i fiskenes levesteder

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management
Authors: Christoffersen, M. (Intern), Støttrup, J. G. (Intern), Svendsen, J. C. (Intern)
Publication date: 2016
Event: Poster session presented at Naturmødet, Hirtshals, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Poster – Annual report year: 2016

Marin fiskepleje – Forskning i fiskenes levesteder

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management
Authors: Christoffersen, M. (Intern), Støttrup, J. G. (Intern), Svendsen, J. C. (Intern)
Publication date: 2016
Event: Poster session presented at Folkemødet 2016, Allinge, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Poster – Annual report year: 2016

Marin Fiskepleje – Hvad er fiskepleje?

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management
Authors: Christoffersen, M. (Intern), Støttrup, J. G. (Intern), Svendsen, J. C. (Intern)
Publication date: 2016
Event: Poster session presented at Naturmødet, Hirtshals, Denmark.
Main Research Area: Technical/natural sciences
Publication: Research › Poster – Annual report year: 2016
Measuring maximum and standard metabolic rates using intermittent-flow respirometry: a student laboratory investigation of aerobic metabolic scope and environmental hypoxia in aquatic breathers

Metabolic rate is one of the most widely measured physiological traits in animals and may be influenced by both endogenous (e.g., body mass) and exogenous factors (e.g., oxygen availability and temperature). Standard metabolic rate (SMR) and maximum metabolic rate (MMR) are two fundamental physiological variables providing the floor and ceiling in aerobic energy metabolism. The total amount of energy available between these two variables constitutes the aerobic metabolic scope (AMS). A laboratory exercise aimed at an undergraduate level physiology class, which details the appropriate data acquisition methods and calculations to measure oxygen consumption rates in rainbow trout Oncorhynchus mykiss, is presented here. Specifically, the teaching exercise employs intermittent flow respirometry to measure SMR and MMR, derives AMS from the measurements and demonstrates how AMS is affected by environmental oxygen. Students' results typically reveal a decline in AMS in response to environmental hypoxia. The same techniques can be applied to investigate the influence of other key factors on metabolic rate (e.g., temperature and body mass). Discussion of the results develops students' understanding of the mechanisms underlying these fundamental physiological traits and the influence of exogenous factors. More generally, the teaching exercise outlines essential laboratory concepts in addition to metabolic rate calculations, data acquisition and unit conversions that enhance competency in quantitative analysis and reasoning. Finally, the described procedures are generally applicable to other fish species or aquatic breathers such as crustaceans (e.g., crayfish) and provide an alternative to using higher (or more derived) animals to investigate questions related to metabolic physiology.

General information
State: Published
Organisations: University of Porto, University of Leeds
Authors: Rosewarne, P. (Ekstern), Wilson, J. (Ekstern), Svendsen, J. C. (Intern)
Pages: 265-283
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 88
ISSN (Print): 0022-1112
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Ongoing climate change is predicted to affect the distribution and abundance of aquatic ectotherms owing to increasing constraints on organismal physiology, in particular involving the metabolic scope (MS) available for performance and fitness. The oxygen- and capacity-limited thermal tolerance (OCLTT) hypothesis prescribes MS as an overarching benchmark for fitness-related performance and assumes that any anaerobic contribution within the MS is insignificant. The MS is typically derived from respirometry by subtracting standard metabolic rate from the maximal metabolic rate; however, the methodology rarely accounts for anaerobic metabolism within the MS. Using gilthead sea bream (Sparus aurata) and Trinidadian guppy (Poecilia reticulata), this study tested for trade-offs (i) between aerobic and anaerobic components of locomotor performance; and (ii) between the corresponding components of the MS. Data collection involved measuring oxygen consumption rate at increasing swimming speeds, using the gait transition from steady to unsteady (burst-assisted) swimming to detect the onset of anaerobic metabolism. Results provided evidence of the locomotor performance trade-off, but only in S. aurata. In contrast, both species revealed significant negative correlations between aerobic and anaerobic components of the MS, indicating a trade-off where both components of the MS cannot be optimized simultaneously. Importantly, the fraction of the MS influenced by anaerobic metabolism was on average 24.3 and 26.1% in S. aurata and P. reticulata, respectively. These data highlight the importance of taking anaerobic metabolism into account when assessing effects of environmental variation on the MS, because the fraction where anaerobic metabolism occurs is a poor indicator of sustainable aerobic performance. Our results suggest that without accounting for...
Anaerobic metabolism within the MS, studies involving the OCLTT hypothesis could overestimate the metabolic scope available for sustainable activities and the ability of individuals and species to cope with climate change.

**General information**

**State:** Published  
**Organisations:** National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Section for Ecosystem based Marine Management, Aalborg University, University of Porto, University of Copenhagen, Fisheries and Maritime Museum  
**Authors:** Ejbye-Ernst, R. (Ekstern), Michaelsen, T. Y. (Ekstern), Tirsgaard, B. (Ekstern), Michaelsen, T. Y. (Ekstern), Wilson, J. M. (Ekstern), Jensen, L. F. (Ekstern), Steffensen, J. F. (Ekstern), Pertoldi, C. (Ekstern), Aarestrup, K. (Intern), Svendsen, J. C. (Intern)  
**Number of pages:** 13  
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**Main Research Area:** Technical/natural sciences

**Publication information**

**Journal:** Conservation Physiology  
**Volume:** 4  
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**Article number:** cow019  
**ISSN (Print):** 2051-1434  
**Ratings:**  
Web of Science (2018): Indexed yes  
Web of Science (2017): Indexed Yes  
Scopus rating (2016): CiteScore 1.66 SJR 0.648 SNIP 0.501  
Web of Science (2016): Indexed yes  
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**Original language:** English  
**Aerobic metabolic scope, Anaerobic metabolism, Oxygen- and capacity-limited thermal tolerance (OCLTT), Sea bream (Sparus aurata), Trade-off, Trinidadian guppy (Poecilia reticulata)**  
**Electronic versions:**  
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**DOIs:** 10.1093/conphys/cow019  
**Links:** http://conphys.oxfordjournals.org/content/4/1/cow019.full.pdf+html  
**Publication:** Research - peer-review › Journal article – Annual report year: 2016

**Phenotypic differences between the sexes in the sexually plastic mangrove rivulus fish (Kryptolebias marmoratus)**

To maximize reproductive success, many animal species have evolved functional sex change. Theory predicts that transitions between sexes should occur when the fitness payoff of the current sex is exceeded by the fitness payoff of the opposite sex. We examined phenotypic differences between the sexes in a sexchanging vertebrate, the mangrove rivulus fish (Kryptolebias marmoratus), to elucidate potential factors that might drive the ‘decision’ to switch sex. Rivulus populations consist of self-fertilizing hermaphrodites and males. Hermaphrodites transition into males under certain environmental conditions, affording us the opportunity to generate 40 hermaphrodite–male pairs where, within a pair, individuals possessed identical genotypes despite being different sexes. We quantified steroid hormone levels, behavior (aggression and risk taking), metabolism and morphology (organ masses). We found that hermaphrodites were more aggressive and risk averse, and had higher maximum metabolic rates and larger gonadosomatic indices. Males had higher steroid hormone levels and showed correlations among hormones that hermaphrodites lacked. Males also had greater total mass and somatic body mass and possessed considerable fat stores. Our findings suggest that there are major differences between the sexes in energy allocation, with hermaphrodites exhibiting elevated maximum metabolic rates, and showing evidence of favoring investments in reproductive tissues over somatic growth. Our study serves as the foundation for future research investigating how environmental challenges affect both physiology and reproductive investment and, ultimately, how these changes dictate the transition between sexes

**General information**

**State:** Published  
**Organisations:** National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, University of Alabama, University of Porto  
**Authors:** Garcia, M. J. (Ekstern), Ferro, J. M. (Ekstern), Mattox, T. (Ekstern), Kopelic, S. (Ekstern), Marson, K. (Ekstern), Jones, R. (Ekstern), Svendsen, J. C. (Intern), Earley, R. L. (Ekstern)  
**Pages:** 988-997
Phenotypic variation in metabolism and morphology correlating with animal swimming activity in the wild: relevance for the OCLTT (oxygen- and capacity-limitation of thermal tolerance), allocation and performance models

Ongoing climate change is affecting animal physiology in many parts of the world. Using metabolism, the oxygen- and capacity-limitation of thermal tolerance (OCLTT) hypothesis provides a tool to predict the responses of ectothermic animals to variation in temperature, oxygen availability and pH in the aquatic environment. The hypothesis remains controversial, however, and has been questioned in several studies. A positive relationship between aerobic metabolic scope and animal activity would be consistent with the OCLTT but has rarely been tested. Moreover, the performance model and the allocation model predict positive and negative relationships, respectively, between standard metabolic rate and activity. Finally, animal activity could be affected by individual morphology because of covariation with cost of transport. Therefore, we hypothesized that individual variation in activity is correlated with variation in metabolism and morphology. To test this prediction, we captured 23 wild European perch (Perca fluviatilis) in a lake, tagged them with telemetry transmitters, measured standard and maximal metabolic rates, aerobic metabolic scope and fineness ratio and returned the fish to the lake to quantify individual in situ activity levels. Metabolic rates were measured using intermittent flow respirometry, whereas the activity assay involved high-resolution telemetry providing positions every 30 s over 12 days. We found no correlation between individual metabolic traits and activity, whereas individual fineness ratio correlated with activity. Independent of body length, and consistent with physics theory, slender fish maintained faster mean and maximal swimming speeds, but this variation did not result in a larger area (in square metres) explored per 24 h. Testing assumptions and predictions of recent conceptual models, our study indicates that individual metabolism is not a strong determinant of animal activity, in contrast to individual morphology, which is correlated with individual activity patterns.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Institute Management, Section for Ecosystem based Marine Management, University of Porto
Publication date: 2016
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Journal: Conservation Physiology
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Scopus rating (2016): CiteScore 1.66 SJR 0.648 SNIP 0.501
Web of Science (2016): Indexed yes
Scopus rating (2015): SJR 0.123 SNIP 0.01
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Original language: English
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10.1093/conphys/cov055
Source: FindIt
Source-ID: 2290373073
Publication: Research - peer-review › Journal article – Annual report year: 2016
Progressive hypoxia decouples activity and aerobic performance of skate embryos

General information
State: E-pub ahead of print
Organisations: Harvard University, Boston University, University of Porto
Authors: Di Santo, V. (Ekstern), Tran, A. H. (Ekstern), Svendsen, J. C. (Intern)
Publication date: 2016
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Scopus rating (2014): SJR 0.109 SNIP 0
Original language: English
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Publication: Research - peer-review › Journal article – Annual report year: 2016

Snæblens tilbagegang i Anthropocæn

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Aarhus University Hospital
Authors: Alstrup, A. K. O. (Ekstern), Svendsen, J. C. (Intern), Jensen, L. F. (Ekstern)
Pages: 31-36
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Habitat
Issue number: 14
Original language: Danish
Publication: Research › Journal article – Annual report year: 2016

Spatial ecology of blue shark and shortfin mako in southern Peru: local abundance, habitat preferences and implications for conservation

While global declines of pelagic shark populations have been recognized for several years, conservation efforts remain hampered by a poor understanding of the spatial distribution and ecology. Two species of conservation concern are the blue shark Prionace glauca and the shortfin mako shark Isurus oxyrinchus. To improve management of the species, this study examined their local abundance patterns, habitat preferences, and distribution in the Southeast Pacific. Catch per unit effort (CPUE) data from an artisanal fishery in Peru were used to identify geographic hotspots and model abundance estimates as a function of environmental variables including the El Niño Southern Oscillation (ENSO). A 10-year data series revealed declining annual landings since 2011, despite no changes in management structures. Significant aggregations of both species were found in the southwestern part of Peruvian waters (74–76°W; 17–19°S) with both locations targeted by major fishing efforts. P. glauca CPUE increased during La Niña conditions, and CPUE of both species declined when water depths exceeded 1000 m. Correlations with lunar illumination and chlorophyll-a were revealed in P. glauca and I. oxyrinchus, respectively. Modeling explained 57 to 61% of the deviance, indicating that other factors not included in the present study might account for unexplained variance in CPUE (e.g. thermocline, location of marine fronts, dissolved oxygen, and gear characteristics). Given the importance of the examined area to shark fisheries and the exploitation of multiple species of conservation concern, the information presented here can be used to inform management strategies designed to limit the depletion of pelagic sharks.
Development of salinity tolerance in the endangered anadromous North Sea houting Coregonus oxyrinchus: implications for conservation measures

The North Sea houting Coregonus oxyrinchus is an endangered anadromous salmonid belonging to the European lake whitefish complex. The last remaining indigenous population of North Sea houting is found in the River Vidaa, Denmark. Despite legislative protection and numerous stocking and habitat restoration programmes, including a (sic)13.4 million EU Life restoration project, populations are declining in most rivers in Denmark. Limited knowledge of the general biology of the species, in particular of the early life history stages and habitat requirements, is a serious impediment to management and conservation. In this study, we investigated larval and juvenile salinity tolerance, providing novel information on the early life stages of North Sea houting. Results revealed an ontogenetic differentiation in salinity tolerance when comparing newly hatched larvae, larvae at later developmental stages and juveniles expected to initiate migration to the Wadden Sea. At all developmental stages, larvae exhibited poor hyperosmotic tolerance, while juveniles performed significantly better. Larvae suffered from high mortality and loss of body water at salinities of 18 ppt and higher, while most juveniles survived 30 ppt at least when exposed to gradually increasing salinities. Our results suggest that larval North Sea houting experience very high mortality if carried directly into the Wadden Sea prematurely, highlighting the need for suitable habitat within rivers to retain larvae. Our study shows how different life stages respond differently to varying environmental conditions and emphasizes the need for understanding the physiological mechanisms to improve conservation of endangered species.
Effects of temperature on specific dynamic action in Atlantic cod Gadus morhua

Growth requires that energy is directed towards ingestion, digestion, absorption and assimilation of a meal; energy expenditures are often expressed as the specific dynamic action (SDA). While SDA is an important part of fish energy budgets and strongly affected by water temperature, temperature effects are not known across a wide temperature range in Atlantic cod Gadus morhua. The objective of this study was to examine effects of temperature (2, 5, 10, 15 or 20 °C) on the energetic cost and time used for SDA in juvenile G. morhua by intermittent flow respirometry. At each temperature, G. morhua were fed a meal of herring (Clupea harengus) corresponding to 5 % of the body mass. Standard metabolic rates measured pre-feeding and post-feeding metabolic rates were measured to determine SDA. The study showed that SDA coefficients (%; SDA energy divided by meal energy) were significantly lower at 2 and 10 °C (5.4-6.3 %) compared to 5, 15 and 20 A degrees C (10.4-12.4 %), while SDA duration increased significantly from 80 h at 10 A degrees C to 130-160 h at 2, 15 and 20 A degrees C and reached a maximum of 250 h at 5 A degrees C. The significant decrease in SDA duration at 10 A degrees C combined with a low SDA coefficient suggests that water temperatures close to 10 A degrees C may represent the optimum temperatures for SDA in this population of G. morhua. Our results suggest that SDA is not a simple function of temperature, but may vary with temperature in a more complex fashion.
General information
State: Published
Organisations: University of Copenhagen, University of Porto
Authors: Tirsgaard, B. (Ekstern), Svendsen, J. C. (Intern), Steffensen, J. F. (Intern)
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.7 SJR 0.562 SNIP 0.821
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.736 SNIP 0.918 CiteScore 1.59
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.652 SNIP 0.891 CiteScore 1.77
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.708 SNIP 0.952 CiteScore 1.72
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.6 SNIP 1.192 CiteScore 1.76
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.659 SNIP 1.033 CiteScore 1.6
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.506 SNIP 0.858
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.444 SNIP 0.703
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.34 SNIP 0.54
Scopus rating (2007): SJR 0.253 SNIP 0.331
Scopus rating (2006): SJR 0.304 SNIP 0.389
Scopus rating (2005): SJR 0.406 SNIP 0.426
Scopus rating (2004): SJR 0.248 SNIP 0.246
Scopus rating (2003): SJR 0.465 SNIP 0.875
Scopus rating (2002): SJR 0.469 SNIP 0.633
Scopus rating (2001): SJR 0.494 SNIP 0.655
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.609 SNIP 0.875
Scopus rating (1999): SJR 0.613 SNIP 0.822

Original language: English

Body mass, energetic cost, metabolic rate, specific dynamic action, temperature effect, Pisces Vertebrata Chordata Animalia (Animals, Chordates, Fish, Nonhuman Vertebrates, Vertebrates) - Osteichthyues [85206] Clupea harengus species herring common Gadus morhua species Atlantic cod common immature, 07504, Ecology: environmental biology - Bioclimatology and biometeorology, 07508, Ecology: environmental biology - Animal, 13002, Metabolism - General metabolism and metabolic pathways, Environmental Sciences, intermittent flow respirometry laboratory techniques,
Geospatial modeling of the Birch River: Distribution of Carmine Shiner (Notropis percobromus) in Geomorphic Response Units (GRU): Carmine Shiner distribution in GRUs

General information
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Organisations: University of Saskatchewan, Fisheries and Oceans Canada, Manitoba Conservation and Water Stewardship
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Publication information
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Volume: 100
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Web of Science (2018): Indexed yes
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.491 SNIP 0.642 CiteScore 1.33
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.681 SNIP 0.751 CiteScore 1.35
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.488 SNIP 0.801 CiteScore 1.24
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.496 SNIP 0.705 CiteScore 1.04
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.582 SNIP 0.849 CiteScore 1.17
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.925 SNIP 0.94 CiteScore 1.78
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.64 SNIP 0.67
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.671 SNIP 0.736
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.5 SNIP 0.707
Scopus rating (2007): SJR 0.612 SNIP 0.933
Scopus rating (2006): SJR 0.547 SNIP 0.793
Scopus rating (2005): SJR 0.528 SNIP 0.888
Scopus rating (2004): SJR 0.586 SNIP 0.773
Scopus rating (2003): SJR 0.647 SNIP 1.07
Scopus rating (2002): SJR 0.567 SNIP 0.773
Scopus rating (2001): SJR 0.425 SNIP 0.591
Scopus rating (2000): SJR 0.341 SNIP 0.534
Scopus rating (1999): SJR 0.335 SNIP 0.511
Is warm-up important in fish locomotion? Recovery from anaerobic metabolism during exercise in striped surfperch Embiotoca lateralis

General information
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Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Aquaculture, University of Porto, University of Iowa, University of Copenhagen, Consiglio Nazionale delle Ricerche
Authors: Svendsen, J. C. (Intern), Methling, C. (Intern), Tirsgaard, B. (Ekstern), Cordero, G. A. (Ekstern), Steffensen, J. F. (Ekstern), Domenici, P. (Ekstern)
Publication date: 2015
Main Research Area: Technical/natural sciences
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Journal: Frontiers in Physiology
Volume: 6
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Ratings:
BFI (2018): BFI-level 1
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.89 SJR 1.765 SNIP 1.157
BFI (2015): BFI-level 1

Intraspecific variation in aerobic and anaerobic locomotion: gilthead sea bream (Sparus aurata) and Trinidadian guppy (Poecilia reticulata) do not exhibit a trade-off between maximum sustained swimming speed and minimum cost of transport

Intraspecific variation and trade-off in aerobic and anaerobic traits remain poorly understood in aquatic locomotion. Using gilthead sea bream (Sparus aurata) and Trinidadian guppy (Poecilia reticulata), both axial swimmers, this study tested four hypotheses: (1) gait transition from steady to unsteady (i.e., burst-assisted) swimming is associated with anaerobic metabolism evidenced as excess post exercise oxygen consumption (EPOC); (2) variation in swimming performance (critical swimming speed; U-crit) correlates with metabolic scope (MS) or anaerobic capacity (i.e., maximum EPOC); (3) there is a trade-off between maximum sustained swimming speed (U-sus) and minimum cost of transport (COTmin); and (4) variation in U-sus correlates positively with optimum swimming speed (U-opt; i.e., the speed that minimizes energy expenditure per unit of distance traveled). Data collection involved swimming respirometry and video analysis. Results showed that anaerobic swimming costs (i.e., EPOC) increase linearly with the number of bursts in S. aurata, with each burst corresponding to 0.53 mg O-2 kg(-1). Data are consistent with a previous study on striped surfperch (Embiotoca lateralis), a labriform swimmer, suggesting that the metabolic cost of burst swimming is similar across various types of locomotion. There was no correlation between U(crit) and MS or anaerobic capacity in S. aurata indicating that other factors, including morphological or biomechanical traits, influenced U-crit. We found no evidence of a trade-off between U-sus and COTmin. In fact, data revealed significant negative correlations between U-sus and COTmin, suggesting that individuals with high U-sus also exhibit low COTmin. Finally, there were positive correlations between U-sus and U-opt. Our study demonstrates the energetic importance of anaerobic metabolism during unsteady swimming, and provides intraspecific evidence that superior maximum sustained swimming speed is associated with superior swimming economy and optimum speed.
Performance assessment of two whole-lake acoustic positional telemetry systems - is reality mining of free-ranging aquatic animals technologically possible?

Acoustic positional telemetry systems (APTs) represent a novel approach to study the behaviour of free ranging aquatic animals in the wild at unprecedented detail. System manufactures promise remarkably high temporal and spatial resolution. However, the performance of APTs has rarely been rigorously tested at the level of entire ecosystems. Moreover, the effect of habitat structure on system performance has only been poorly documented. Two APTs were deployed to cover two small lakes and a series of standardized stationary tests were conducted to assess system performance. Furthermore, a number of tow tests were conducted to simulate moving fish. Based on these data, we quantified system performance in terms of data yield, accuracy and precision as a function of structural complexity in relation to vegetation. Mean data yield of the two systems was 40% (Lake1) and 60% (Lake2). Average system accuracy (acc) and precision (prec) were Lake1: acc = 3.1 m, prec = 1.1 m; Lake2: acc = 1.0 m, prec = 0.2 m. System performance was negatively affected by structural complexity, i.e., open water habitats yielded far better performance than structurally complex vegetated habitats. Post-processing greatly improved data quality, and sub-meter accuracy and precision were, on average, regularly achieved in Lake2 but remained the exception in the larger and structurally more complex Lake1. Moving transmitters were tracked well by both systems. Whereas overestimation of moved distance is inevitable for stationary transmitters due to accumulation of small tracking errors, moving transmitters can result in both over- and underestimation of distances depending on circumstances. Both deployed APTs were capable of providing high resolution positional data at the scale of entire lakes and are suitable systems to mine the reality of free ranging fish in their natural environment. This opens important opportunities to advance several fields of study such as movement ecology and animal social networks in the wild. It is recommended that thorough performance tests are conducted in any study utilizing APTs. The APTs tested here appear best suited for studies in structurally simple ecosystems or for studying pelagic species. In such situations, the data quality provided by the APTs is exceptionally high.

General information
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Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Section for Marine Living Resources, Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB), Berlin, University of Porto, University of the Balearic Islands, Humboldt-University of Berlin
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Phenotypic variation in metabolism and morphology correlating with fish movements in the wild: a study combining respirometry and telemetry
Survival and progression rates of anadromous brown trout kelts Salmo trutta during downstream migration in freshwater and at sea

The marine migration of post-spawning anadromous fish remains poorly understood. The present study examined survival and progression rates of anadromous brown trout Salmo trutta L. after spawning (kelts) during downriver, fjord, and sea migration. Kelts (n = 49) were captured in the Danish River Gudenaa, tagged with acoustic transmitters and subsequently recorded by automatic receivers. Kelts spent on average 25 d moving down the 45 km river and through the brackish fjord. The fish entered the Kattegat Sea between 14 April and 30 May. Eighteen of the 49 kelts disappeared in the river and fjord during outward migration, likely due to mortality. Survival was not significantly related to gill Na+/K+-ATPase activity, suggesting that physiological adaptation to saltwater may be less critical for adults compared to juveniles (smolts). Of the 31 fish that entered the Kattegat Sea, 45% survived and returned to the fjord. The duration of the entire marine migration, from leaving to entering the river, was on average 163 d. The fish returned from the Kattegat Sea to the fjord between 22 July and 21 October. Upon return, the fish spent 1−90 d passing through Randers Fjord, with most individuals completing the reach within 4 d, suggesting that the kelts spent limited time foraging after returning to the fjord. The total survival during the entire marine migration, including the fjord, was a minimum of 29%. Our study provides data that are important for management of anadromous brown trout, and the high survival highlights that kelts may represent a valuable resource for both population reproduction and recreational fisheries.
Calcium-dependent behavioural responses to acute copper exposure in Oncorhynchus mykiss

Using rainbow trout Oncorhynchus mykiss, the present study demonstrated that: (1) calcium (Ca) increased the range of copper (Cu) concentrations that O. mykiss avoided; (2) Ca conserved the maintenance of pre-exposure swimming activity during inescapable acute (10 min) Cu exposure. Data showed that when presented with a choice of Cu-contaminated water (ranging from 0 to 454 µg Cu l⁻¹) and uncontaminated water in a choice tank, O. mykiss acclimated and tested at low Ca concentration (3 mg Ca l⁻¹) avoided the 10 µg Cu l⁻¹ only. By contrast, O. mykiss acclimated and tested at high Ca concentration (158 mg Ca l⁻¹) avoided all the Cu concentrations ≥37 µg l⁻¹. The Cu avoidance was connected with increased spontaneous swimming speed in the Cu-contaminated water. When subjected to inescapable Cu exposure (35 µg Cu l⁻¹), O. mykiss acclimated and tested at low Ca concentration reduced their spontaneous swimming speed, whereas no response was observed in O. mykiss acclimated and tested at high Ca concentration. Collectively, the data support the conclusion that in O. mykiss the behavioural responses to acute Cu exposure are Ca-dependent.

General information
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Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Aarhus University
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Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
Evidence of circadian rhythm, oxygen regulation capacity, metabolic repeatability and positive correlations between forced and spontaneous maximal metabolic rates in Lake Sturgeon Acipenser fulvescens

Animal metabolic rate is variable and may be affected by endogenous and exogenous factors, but such relationships remain poorly understood in many primitive fishes, including members of the family Acipenseridae (sturgeons). Using juvenile lake sturgeon (Acipenser fulvescens), the objective of this study was to test four hypotheses: 1) A. fulvescens exhibits a circadian rhythm influencing metabolic rate and behaviour; 2) A. fulvescens has the capacity to regulate metabolic rate when exposed to environmental hypoxia; 3) measurements of forced maximum metabolic rate (MMRF) are repeatable in individual fish; and 4) MMRF correlates positively with spontaneous maximum metabolic rate (MMRS). Metabolic rates were measured using intermittent flow respirometry, and a standard chase protocol was employed to elicit MMRF. Trials lasting 24 h were used to measure standard metabolic rate (SMR) and MMRS. Repeatability and correlations between MMRF and MMRS were analyzed using residual body mass corrected values. Results revealed that A. fulvescens exhibit a circadian rhythm in metabolic rate, with metabolism peaking at dawn. SMR was unaffected by hypoxia (30% air saturation (O-2sat)), demonstrating oxygen regulation. In contrast, MMRF was affected by hypoxia and decreased across the range from 100% O-2sat to 70% O-2sat. MMRF was repeatable in individual fish, and MMRF
correlated positively with MMRS, but the relationships between MMRF and MMRS were only revealed in fish exposed to hypoxia or 24 h constant light (i.e. environmental stressor). Our study provides evidence that the physiology of A. fulvescens is influenced by a circadian rhythm and suggests that A. fulvescens is an oxygen regulator, like most teleost fish. Finally, metabolic repeatability and positive correlations between MMRF and MMRS support the conjecture that MMRF represents a measure of organism performance that could be a target of natural selection.

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Laboratory experiments demonstrate that bubble curtains can effectively inhibit movement of common carp

Although bubble curtains have been proposed many times as practical and inexpensive solutions to hinder the movement of invasive fish, few studies have examined why or how they might work. By understanding how bubble curtains influence fish behavior, management tools could be developed to control movement of invasive fish. In this study, the common carp (Cyprinus carpio L.) was used to examine the performance of three different bubble curtains (fine-, graded-, and coarse-bubble) and acoustically enhanced systems in an indoor channel. Trials revealed that the graded- and coarse-bubble systems reduced common carp passage across the curtain by 75-85% in both up- and down-stream directions. Concurrent acoustic field measurements revealed that these bubble curtains generated sound near 200 Hz at approximately 130 dB (ref 1 mu Pa), well above the common carp hearing threshold. Further testing with speaker arrays and lighting indicated that carp avoidance of the bubble curtain involved responses to sound and fluid motion rather than visual cues. Although field tests are warranted, our results suggest that bubble curtains may be a viable and inexpensive deterrent system to limit common carp movement. (C) 2014 Elsevier B.V. All rights reserved.
Muddied waters: suspended sediment impacts on gill structure and aerobic scope in an endangered native and an invasive freshwater crayfish
Suspended sediment (SS) loadings in freshwater habitats have increased over the past century and SS is now a significant environmental stressor. Greater tolerance to environmental stressors has been proposed as a factor in the success of aquatic invasive species. Further, parasites may interact with environmental stressors to increase host susceptibility to loss of fitness and mortality. We compared the effects of SS exposure on the gill structure and aerobic scope of the endangered white-clawed crayfish (Austropotamobius pallipes), and the invasive signal crayfish (Pacifastacus leniusculus), and assessed impacts in relation to parasite burden. SS caused gill fouling and reduction in aerobic scope in both species, though A. pallipes was more susceptible than invasive P. leniusculus. The parasite Branchiobdella astaci, a crayfish worm that infests the gills, interacted with the sediment to affect gill structure whereas infection with the microsporidian parasite Thelohania contejeani had no effect on crayfish response to SS. Juvenile P. leniusculus had a higher standard metabolic rate than A. pallipes, which may be linked to competitive advantages such as higher growth rate and behavioural dominance. Conservation of A. pallipes often involves relocation of threatened populations to isolated stillwaters; our findings suggest that SS levels should be assessed before relocation.
The physiological basis of the migration continuum in brown trout (Salmo trutta)

Partial migration is common in many animal taxa; however, the physiological variation underpinning migration strategies remains poorly understood. Among salmonid fishes, brown trout (Salmo trutta) is one of the species that exhibits the most complex variation in sympatric migration strategies, expressed as a migration continuum, ranging from residency to anadromy. In looking at brown trout, our objective with this study was to test the hypothesis that variation in migration strategies is underpinned by physiological variation. Prior to migration, physiological samples were taken from fish in the stream and then released at the capture site. Using telemetry, we subsequently classified fish as resident, short-distance migrants (potamodromous), or long-distance migrants (potentially anadromous). Our results revealed that fish belonging to the resident strategy differed from those exhibiting any of the two migratory strategies. Gill Na,K-ATPase activity, condition factor, and indicators of nutritional status suggested that trout from the two migratory strategies were smoltified and energetically depleted before leaving the stream, compared to those in the resident strategy. The trout belonging to the two migratory strategies were generally similar; however, lower triacylglycerides levels in the short-distance migrants indicated that they were more lipid depleted prior to migration compared with the long-distance migrants. In the context of migration cost, we suggest that additional lipid depletion makes migrants more inclined to terminate migration at the first given feeding opportunity, whereas individuals that are less lipid depleted will migrate farther. Collectively, our data suggest that the energetic state of individual fish provides a possible mechanism underpinning the migration continuum in brown trout.
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BFI (2009): BFI-level 1  
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Scopus rating (2007): SJR 1.057 SNIP 1.033  
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Web of Science (2005): Indexed yes  
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Effects of angling and manual handling on pike behaviour investigated by high-resolution positional telemetry  
Human disturbances such as angling and manual handling may have long-term effects on the behaviour of pike, Esox lucius L., an ecologically important species. Using continuous high-resolution positional telemetry, this study compared the swimming activity of handled and unhandled pike in a small lake. Pike pre-equipped with acoustic transmitters were angled and exposed to a handling protocol including measurements of length and mass. Pike not recaptured constituted an unhandled control group. Results demonstrated that the handling protocol caused temperature-dependent changes in pike activity, with higher temperatures leading to lower activity of the recaptured pike. The effects, however, were transitory and not detectable after 48-h post-release. These findings indicate that pike are relatively resilient to handling and quickly resume pre-handling activity.

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Effects of intraspecific variation in reproductive traits, pectoral fin use and burst swimming on metabolic rates and swimming performance in the Trinidadian guppy (Poecilia reticulata)

There is considerable intraspecific variation in metabolic rates and locomotor performance in aquatic ectothermic vertebrates; however, the mechanistic basis remains poorly understood. Using pregnant Trinidadian guppies (Poecilia reticulata), a livebearing teleost, we examined the effects of reproductive traits, pectoral fin use and bursa-assisted swimming on swimming metabolic rate, standard metabolic rate (MO2std) and prolonged swimming performance (Ucrit). Reproductive traits included reproductive allocation and pregnancy stage, the former defined as the mass of the reproductive tissues divided by the total body mass. Results showed that the metabolic rate increased curvilinearly with swimming speed. The slope of the relationship was used as an index of swimming cost. There was no evidence that reproductive traits correlated with swimming cost, MO2std or Ucrit. In contrast, data revealed strong effects of pectoral fin use on swimming cost and Ucrit. Poecilia reticulata employed body-caudal fin (BCF) swimming at all tested swimming speeds; however, fish with a high simultaneous use of the pectoral fins exhibited increased swimming cost and decreased Ucrit. These data indicated that combining BCF swimming and pectoral fin movement over a wide speed range, presumably to support swimming stability and control, is an inefficient swimming behaviour. Finally, transition to burst-assisted swimming was associated with an increase in aerobic metabolic rate. Our study highlights factors other than swimming speed that affect swimming cost and suggests that intraspecific diversity in biomechanical performance, such as pectoral fin use, is an important source of variation in both locomotor cost and maximal performance.

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Scopus rating (2014): SJR 1.722 SNIP 1.331 CiteScore 2.51
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BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.612 SNIP 1.395 CiteScore 2.91
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Scopus rating (2011): SJR 1.534 SNIP 1.315 CiteScore 2.77
Excess post-hypoxic oxygen consumption is independent from lactate accumulation in two cyprinid fishes

Carassius carassius responds to hypoxic conditions by conversion of lactate into ethanol, which is excreted over the gills. However, a closely related species, Cyprinus carpio, does not possess the ability to produce ethanol and would be expected to accumulate lactate during hypoxic exposure. While the increase in oxygen consumption in fish required following strenuous exercise or low environmental oxygen availability has been frequently considered, the primary contributing mechanism remains unknown. This study utilized the close relationship but strongly divergent physiology between C. carpio and C. carassius to examine the possible correlation between excess post-hypoxic oxygen consumption (EPHOC) and lactate accumulation. No difference in the EPHOC/O2 deficit ratio was observed between the two species after 2.5 h anoxia, with ratios of 2.0 ± 0.6 (C. carpio) and 1.3 ± 0.3 (C. carassius). As predicted, lactate accumulation dynamics did significantly differ between the species in both plasma and white muscle following anoxic exposure. Significant lactate accumulation was seen in both plasma and muscle in C. carpio, but there was no accumulation of lactate in white muscle tissue of C. carassius. These findings indicate that lactate accumulated as a consequence of 2.5 h anoxic exposure is not a major determinant of the resulting EPHOC.
Local adaptation to altitude underlies divergent thermal physiology in tropical killifishes of the genus Aphyosemion

In watersheds of equatorial West Africa, monophyletic groups of killfish species (genus Aphyosemion) occur in discrete altitudinal ranges, low altitude species (LA, sea level to similar to 350 m) or high altitude species (HA, 350 to 900 m). We investigated the hypothesis that local adaptation to altitude by the LA and HA species would be revealed as divergent effects of temperature on their physiological energetics. Two species from each group (mass similar to 350 mg) were acclimated to 19, 25 and 28 degrees C, with 19 and 28 degrees C estimated to be outside the thermal envelope for LA or HA, respectively, in the wild. Wild-caught animals (F0 generation) were compared with animals raised in captivity at 25 degrees C (F1 generation) to investigate the contribution of adaptation versus plasticity. Temperature significantly increased routine metabolic rate in all groups and generations. However, LA and HA species differed in the effects of temperature on their ability to process a meal. At 25 degrees C, the specific dynamic action (SDA) response was completed within 8 h in all groups, but acclimation to temperatures beyond the thermal envelope caused profound declines in SDA performance. At 19 degrees C, the LA required similar to 14 h to complete the SDA, whereas the HA required only similar to 7 h. The opposite effect was observed at 28 degrees C. This effect was evident in both F0 and F1. Reaction norms for effects of temperature on SDA therefore revealed a trade-off, with superior performance at warmer temperatures by LA being associated with inferior performance at cooler temperatures, and vice-versa in HA. The data indicate that divergent physiological responses to temperature in the LA and HA species reflect local adaptation to the thermal regime in their habitat, and that local adaptation to one thermal environment trades off against performance in another.

General information
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Scopus rating (2013): SJR 1.74 SNIP 1.147 CiteScore 3.94
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Authors: Baktoft, H. (Intern), Skov, C. (Intern), Svendsen, J. C. (Intern), Berg, S. (Intern), Aarestrup, K. (Intern), Koed, A. (Intern), Jacobsen, L. (Intern)
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Excess posthypoxic oxygen consumption in rainbow trout (Oncorhynchus mykiss): recovery in normoxia and hypoxia

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Volume: 90
Ontogenetic differentiation of swimming performance and behaviour in relation to habitat availability in the endangered North Sea houting (Coregonus oxyrinchus)

The survival of the highly endangered, anadromous fish species North Sea houting (Coregonus oxyrinchus) depends on the correct timing of downstream dispersal during its early ontogenetic stages. To date, however, no studies have investigated the ontogenetic differentiation of swimming performance and behaviour, including the potential of habitat complexity to influence dispersal rates. By testing larval and juvenile North Sea houting in a laboratory, we examined (1) swimming performance measured as maximum swimming performance (Umax) and routine swimming speed (Uroutine) and (2) the potential of habitat complexity (i.e., cover providing shade) to influence dispersal behaviour in an indoor stream channel. The Umax and the Uroutine were 9.4 and 4.6 cm s$^{-1}$, respectively, in the larvae [body length (BL) s$^{-1}$: 7.3 and 3.5, respectively], and 25.2 and 16.3 cm s$^{-1}$ in the juveniles (BL s$^{-1}$: 7.0 and 5.2, respectively). We compared laboratory swimming performance data with water speeds in North Sea houting spawning areas in the Danish River Vidaa. Results
showed that the water speeds present in 95% and 85% of the water column caused downstream displacement of larvae and juveniles, respectively. However, areas with slow-flowing water near river banks and river beds could function as nursery habitats. Stream channel experiments showed that cover providing shade caused delayed dispersal in both larvae and juveniles, but the larvae dispersed later and spent less time under cover than the juveniles, a finding that implies ontogenetic effects. Finally, the larvae refused to cross an upstream-positioned cover, a behaviour that was not observed in the juveniles. Therefore, habitat complexity may have the potential to influence dispersal behaviour in both larval and juvenile North Sea houting. Overall, we provided the first evidence of ontogenetic differentiation in the North Sea houting. These findings will be valuable for the development and dissemination of science-based conservation strategies.

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  - BFI (2014): BFI-level 1
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  - Scopus rating (2012): SJR 0.554 SNIP 0.618 CiteScore 1.19
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  - BFI (2011): BFI-level 1
  - Scopus rating (2011): SJR 0.628 SNIP 0.697 CiteScore 1.17
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  - Scopus rating (2010): SJR 0.589 SNIP 0.545
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  - Scopus rating (2009): SJR 0.493 SNIP 0.56
  - BFI (2008): BFI-level 1
  - Scopus rating (2008): SJR 0.737 SNIP 0.663
  - Scopus rating (2007): SJR 0.662 SNIP 0.82
  - Web of Science (2007): Indexed yes
  - Scopus rating (2006): SJR 0.661 SNIP 0.992
Seasonal and diel effects on the activity of northern pike studied by high-resolution positional telemetry

Temperate lakes can be ice covered for several months each year, yet little is known about the behaviour and activity of the fish during the cold season. As northern pike represents the top of the food web in many northern temperate lakes and may structure the ecosystem both directly and indirectly, a detailed understanding of the behaviour of this species during winter is important. We continuously monitored the activity of adult northern pike (Esox lucius) in a small temperate lake from late summer to winter for two consecutive years using an automatic acoustic positional telemetry system. Four subsample periods representing different temperature regimes from each year were chosen for further investigation. The results revealed that pike activity was similar between seasons. In all periods, a distinct diel pattern, showing increased activity during day as compared to night, was evident. Our findings indicate that the fish component of temperate lentic ecosystems can be more active during the cold season than previously assumed. This may have implications for the structuring effect of pike on the lower trophic levels
Snæblién – den lange kamp for overlevelse

General information
State: Published
Organisations: Aarhus University
Authors: Jensen, L. F. (Ekstern), Poulsen, S. B. (Ekstern), Svendsen, J. C. (Intern)
Pages: 121-133
Publication date: 2012
Main Research Area: Technical/natural sciences

Publication information
Journal: Sjæk'len. Årbog for Fiskeri- og Søfartsmuseet
Volume: 2012
ISSN (Print): 0904-1923
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
BFI (2016): BFI-level 1
Behaviour of rainbow trout Oncorhynchus mykiss presented with a choice of normoxia and stepwise progressive hypoxia

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology
Authors: Poulsen, S. B. (Intern), Jensen, L. F. (Ekstern), Nielsen, K. S. (Ekstern), Malte, H. (Ekstern), Aarestrup, K. (Intern), Svendsen, J. C. (Intern)
Pages: 969-979
Publication date: 2011
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 79
Issue number: 4
ISSN (Print): 0022-1112
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.93 SNIP 1.035 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.895 SNIP 0.946 CiteScore 1.66
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
Can metabolic properties explain variation in individual behaviour?

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources, Section for Ocean Ecology and Climate
Publication date: 2011
Event: Abstract from 1st International Conference on Fish Telemetry, Sapporo, Japan.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 281697
Publication: Research › Conference abstract for conference – Annual report year: 2011

Can metabolic properties explain variation in individual behaviour? Attempting to link physiology and morphology with field behavior

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources, Section for Ocean Ecology and Climate
Publication date: 2011
Linking individual behaviour and migration success in Salmo salar smolts approaching a water withdrawal site: implications for management

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources, Section for Population Ecology and Genetics
Authors: Svendsen, J. C. (Intern), Aarestrup, K. (Intern), Malte, H. (Ekstern), Thygesen, U. H. (Intern), Baktoft, H. (Intern), Koed, A. (Intern), Deacon, M. G. (Ekstern), Cubitt, K. F. (Ekstern), McKinley, R. S. (Ekstern)
Pages: 201-209
Publication date: 2011
Main Research Area: Technical/natural sciences

Publication Information
Journal: Aquatic Living Resources
Volume: 24
Issue number: 2
ISSN (Print): 0990-7440
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.41 SJR 0.59 SNIP 0.743
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.747 SNIP 0.848 CiteScore 1.39
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.641 SNIP 0.905 CiteScore 1.25
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.547 SNIP 0.68 CiteScore 1.15
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.554 SNIP 0.618 CiteScore 1.19
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.628 SNIP 0.697 CiteScore 1.17
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.589 SNIP 0.545
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.493 SNIP 0.56
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.737 SNIP 0.663
Scopus rating (2007): SJR 0.662 SNIP 0.82
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.661 SNIP 0.992
Web of Science (2006): Indexed yes
Effects of a surface oriented travelling screen and water abstraction practices on downstream migrating Salmonidae smolts in a lowland stream

Downstream migration of immature salmonids (smolts) may be associated with severe mortalities in anthropogenically altered channels. In Pacific salmon, several investigations have suggested the use of the dominating surface orientation of smolts to improve fish by-pass structures in large and deep hydroelectric reservoirs. The present study tested the use of a surface orientated travelling screen to guide Atlantic salmon (Salmo salar L.) and brown trout (Salmo trutta L.) smolts past a water abstraction site in a shallow lowland stream. The percentage of total discharge abstracted from the stream was included in the analyses. Indigenous migrating smolts were trapped, PIT tagged and subsequently released upstream of the water abstraction site. Releases shifted between a present or absent travelling screen. The migration success of the released smolts was evaluated using a trap situated downstream of the water abstraction site. There was no evidence that the surface oriented travelling screen had any influence on the probability of fish passing the water abstraction site. However, for both species, the probability of successful migration past the water abstraction site correlated negatively with the abstracted percentage of the total daily stream discharge. These findings may have important management implications because they suggest that short term changes in the percentage of total stream discharge abstracted may have consequences for the downstream migration success of smolts. Copyright (C) 2009 John Wiley & Sons, Ltd.
Effects of food deprivation on refuge use and dispersal in juvenile North Sea houting Coregonus oxyrinchus under experimental conditions

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Poulsen, S. (Ekstern), Svendsen, J. C. (Intern), Jensen, L. (Ekstern), Schultz, C. (Ekstern), Jäger-Kleinicke, T. (Ekstern), Schwarten, H. (Ekstern)
Pages: 1702-1708
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 77
Issue number: 7
ISSN (Print): 0022-1112
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
Et studium af svømmeevner og adfærd hos yngel af nordsøsnæbel (Coregonus oxyrinchus L.)

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology
Authors: Poulsen, S. B. (Intern), Jensen, L. F. (Ekstern), Svendsen, J. C. (Intern), Deacon, M. (Ekstern)
Pages: 73-81
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Flora og Fauna
Volume: 116
Issue number: 3
ISSN (Print): 0015-3818
Ratings:
Web of Science (2018): Indexed yes
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Scopus rating (2000): SJR 0.128
Scopus rating (1999): SJR 0.103
Original language: Danish
Source: orbit
Source-ID: 268795
Publication: Research › Journal article – Annual report year: 2011

Partition of aerobic and anaerobic swimming costs related to gait transitions in a labriform swimmer

Members of the family Embiotocidae exhibit a distinct gait transition from exclusively pectoral fin oscillation to combined pectoral and caudal fin propulsion with increasing swimming speed. The pectoral–caudal gait transition occurs at a threshold speed termed Up–c. The objective of this study was to partition aerobic and anaerobic swimming costs at speeds below and above the Up–c in the striped surfperch Embiotoca lateralis using swimming respirometry and video analysis to test the hypothesis that the gait transition marks the switch from aerobic to anaerobic power output. Exercise oxygen consumption rate was measured at 1.4, 1.9 and 2.3 L s–1. The presence and magnitude of excess post-exercise oxygen consumption (EPOC) were evaluated after each swimming speed. The data demonstrated that 1.4 L s–1 was below the Up–c, whereas 1.9 and 2.3 L s–1 were above the Up–c. These last two swimming speeds included caudal fin propulsion in a mostly steady and unsteady (burst-assisted) mode, respectively. There was no evidence of EPOC after swimming at 1.4 and 1.9 L s–1, indicating that the pectoral–caudal gait transition was not a threshold for anaerobic metabolism. At 2.3 L s–1, E. lateralis switched to an unsteady burst and flap gait. This swimming speed resulted in EPOC, suggesting that anaerobic metabolism constituted 25% of the total costs. Burst activity correlated positively with the magnitude of the EPOC. Collectively, these data indicate that steady axial propulsion does not lead to EPOC whereas transition to burst-assisted swimming above Up–c is associated with anaerobic metabolism in this labriform swimmer.

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Svendsen, J. C. (Intern), Tudorache, C. (Ekstern), Jordan, A. D. (Ekstern), Steffensen, J. F. (Ekstern), Aarestrup, K. (Intern), Domenici, P. (Ekstern)
Pages: 2177-2183
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Experimental Biology
Volume: 213
Issue number: 13
ISSN (Print): 0022-0949
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
Survival and progression rates of large European silver eel Anguilla anguilla in late freshwater and early marine phases

The population of European silver eel Anguilla anguilla has declined tremendously in the last decades. The cause of this decline is unknown, and it is necessary to investigate the migratory behaviour and survival rates of silver eels during the reproductive migration in order to understand if the decline is related to factors acting during that migration. We estimated survival and progression rates of European silver eel migrating in the lower part of the River Gudenaa and during the first phase of the marine migration in the Randers Fjord in Denmark. Fifty migrating silver eel (total body length: 56 to 84 cm) were captured, and each was equipped with an acoustic transmitter. Their migration was subsequently monitored using an array of automatic listening stations, and progression rate and mortality in the river, inner part of the fjord and outer part of the fjord were estimated. Survival was high in fresh water. However, 60% of eels were lost in the inner and outer fjord, supporting the hypothesis that mortality is large in the early phase of the marine migration and that fishing may be a major cause of mortality of silver eels. There was no indication that the slowest-migrating individuals were more prone to fishing mortality than the faster-migrating individuals. Progression rate increased as the eels proceeded downriver and out of the fjord. The migration was predominantly nocturnal, both in the river and fjord. Based on the available evidence, a considerable increase in eel survival in the river–fjord system will be needed in order to fulfil the goals in the European Union recovery plan for eels.

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Aarestrup, K. (Intern), Thorstad, E. B. (Ekstern), Koed, A. (Intern), Svendsen, J. C. (Intern), Jepsen, N. (Intern), Pedersen, M. I. (Intern), Økland, F. (Ekstern)
Pages: 263-270
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Aquatic Biology
Volume: 9
Issue number: 3
ISSN (Print): 1864-7782
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.847 SNIP 0.895 CiteScore 1.82
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.767 SNIP 0.713 CiteScore 1.41
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.681 SNIP 0.678 CiteScore 1.44
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.641 SNIP 0.618 CiteScore 1.34
ISI indexed (2013): ISI indexed no
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.814 SNIP 0.813 CiteScore 1.7
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.844 SNIP 0.848 CiteScore 1.79
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.899 SNIP 0.666
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.631 SNIP 0.483
BFI (2008): BFI-level 1
Linking reproduction, swimming performance, and habitat use in the Trinidadian guppy, Poecilia reticulata

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Banet, A. I. (Ekstern), Svendsen, J. C. (Intern), Eng, K. J. (Ekstern)
Publication date: 2009
Event: Poster session presented at SICB (The Society for Integrative & Comparative Biology) Annual Meeting, Seattle, Washington, USA,
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 252660
Publication: Research › Poster – Annual report year: 2009

New insights in pike behaviour

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Baktoft, H. (Intern), Jacobsen, L. (Intern), Berg, S. (Intern), Aarestrup, K. (Intern), Skov, C. (Intern), Svendsen, J. C. (Intern)
Publication date: 2009
Event: Abstract from PhD Student Seminar, Søminestationen, Holbæk, Danmark, .
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 252607
Publication: Research › Conference abstract for conference – Annual report year: 2009

New insights in pike behaviour using 2D/3D telemetry

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources, Mathematical Statistics, Department of Informatics and Mathematical Modeling
Publication date: 2009
Event: Abstract from 8th Conference on Fish Telemetry held in Europe; Umeå, Sweden; September 14-18, .
Organochlorine fingerprinting to determine foraging areas of sea-ranched Atlantic salmon: A case study from Denmark

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Svendsen, T. C. (Ekstern), Vorkamp, K. (Ekstern), Svendsen, J. C. (Intern), Aarestrup, K. (Intern), Frier, J. (Ekstern)
Pages: 598-603
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: North American Journal of Fisheries Management
Volume: 29
Issue number: 3
ISSN (Print): 0275-5947
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.653 SNIP 0.842 CiteScore 1.12
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.599 SNIP 0.798 CiteScore 1.04
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.489 SNIP 0.733 CiteScore 0.89
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.618 SNIP 0.908 CiteScore 0.94
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.788 SNIP 0.976 CiteScore 1.16
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.759 SNIP 0.691 CiteScore 0.94
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.802 SNIP 0.742
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.673 SNIP 0.768
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.698 SNIP 0.877
Scopus rating (2007): SJR 0.968 SNIP 0.972
Scopus rating (2006): SJR 0.837 SNIP 0.728
Scopus rating (2005): SJR 0.821 SNIP 0.967
Scopus rating (2004): SJR 0.894 SNIP 0.972
Scopus rating (2003): SJR 1.088 SNIP 1.066
Scopus rating (2002): SJR 1.02 SNIP 1.307
Scopus rating (2001): SJR 0.763 SNIP 0.87
Scopus rating (2000): SJR 0.738 SNIP 0.894
Pectoral fin beat frequency predicts oxygen consumption during spontaneous activity in a labriform swimming fish (Embiotoca lateralis)

The objective of this study was to identify kinematic variables correlated with oxygen consumption during spontaneous labriform swimming. Kinematic variables (swimming speed, change of speed, turning angle, turning rate, turning radius and pectoral fin beat frequency) and oxygen consumption (MO2) of spontaneous swimming in Embiotoca lateralis were measured in a circular arena using video tracking and respirometry, respectively. The main variable influencing MO2 was pectoral fin beat frequency \( (r^2 = 0.71) \). No significant relationship was found between swimming speed and pectoral fin beat frequency. Complementary to other methods within biotelemetry such as EMG it is suggested that such correlations of pectoral fin beat frequency may be used to measure the energy requirements of labriform swimming fish such as E. lateralis in the field, but need to be taken with great caution since movement and oxygen consumption patterns are likely to be quite different in field situation compared to a small lab tank. In addition, our methods could be useful to measure metabolic costs of growth and development, or bioassays for possible toxicological effects on fish.
The volitional travel speed varies with reproductive state in mature female brown trout Salmo trutta

This study tested the effect of reproduction on the volitional travel speed of mature female brown trout Salmo trutta L. The downstream travel speed in the pre-spawning state was 0.25 m s⁻¹ (95% CI: 0.19, 0.34) while it increased significantly to 0.65 m s⁻¹ (95% CI: 0.49, 0.87) in the post-spawning state. The results suggest state-dependent travel speed in S. trutta.

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources, Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Svendsen, J. C. (Intern), Aarestrup, K. (Intern), Dolby, J. (Intern), Svendsen, T. (Ekstern), Christensen, R. H. B. (Intern)
Pages: 901-907
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 75
Issue number: 4
ISSN (Print): 0022-1112
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98

Oxygen consumption, Swimming performance, Energetics, Striped surfperch, Embiotoca lateralis, Labriform swimming, Metabolism

DOIs:
10.1007/s10641-008-9395-x
Survival and behaviour of European silver eel in late freshwater and early marine phase during spring migration

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Aarestrup, K. (Intern), Thorstad, E. (Ekstern), Koed, A. (Intern), Jepsen, N. (Intern), Svendsen, J. C. (Intern), Pedersen, M. I. (Intern), Skov, C. (Intern), Okland, F. (Ekstern)
Pages: 435-440
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Fisheries Management and Ecology
Evidence for non-random spatial positioning of migrating smolts (Salmonidae) in a small lowland stream

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Svendsen, J. C. (Intern), Eskesen, A. (Ekstern), Aarestrup, K. (Intern), Koed, A. (Intern), Jordan, A. (Ekstern)
Pages: 1147-1158
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Freshwater Biology
Volume: 52
Issue number: 6
ISSN (Print): 0046-5070
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.36 SJR 1.566 SNIP 1.41
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.537 SNIP 1.371 CiteScore 2.95
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.487 SNIP 1.473 CiteScore 3.03
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.045 SNIP 1.9 CiteScore 4.02
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.075 SNIP 1.755 CiteScore 3.76
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.927 SNIP 1.628 CiteScore 3.33
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.736 SNIP 1.525
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.734 SNIP 1.514
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.618 SNIP 1.502
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.741 SNIP 1.701
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.943 SNIP 1.869
Scopus rating (2005): SJR 1.996 SNIP 1.882
Scopus rating (2004): SJR 1.584 SNIP 1.543
Scopus rating (2003): SJR 1.753 SNIP 1.552
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.34 SNIP 1.452
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.486 SNIP 1.437
Scopus rating (2000): SJR 1.806 SNIP 1.59
Use of a novel acoustic dissolved oxygen transmitter for fish telemetry

The multiple responses of fishes to changes in dissolved oxygen saturations have been studied widely in the laboratory. In contrast only few studies have included field observations. The objective of the present study was to evaluate the performance of a novel acoustic dissolved oxygen transmitter for field biotelemetry. The results demonstrated that the output of the transmitter was unaffected by three different temperatures (10 to 30 degrees C) and described the dissolved oxygen saturation with high accuracy ($r^2 > 0.99$) over the entire range of 0 to 191% saturation. The response time ($\geq 90\%$ of end value) of the transmitter was 12 s both in terms of decreasing (100 to 0%) and increasing (0 to 100%) oxygen saturations. When externally attached to fishes the present findings support the use of the transmitter for reliable dissolved oxygen measurements on individuals living in environments that may change both temporally and spatially with regard to ambient temperature and dissolved oxygen saturation.

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Svendsen, J. C. (Intern), Aarestrup, K. (Intern), Steffensen, J. (Ekstern), Herskin, J. (Ekstern)
Pages: 103-108
Publication date: 2006
Main Research Area: Technical/natural sciences

Publication information
Journal: Marine Technology Society Journal
Volume: 40
Issue number: 1
ISSN (Print): 0025-3324
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.363 SNIP 0.589 CiteScore 0.87
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.287 SNIP 0.692 CiteScore 0.65
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.296 SNIP 0.68 CiteScore 0.68
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.29 SNIP 0.752 CiteScore 0.78
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.284 SNIP 0.613 CiteScore 0.61
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.195 SNIP 0.548 CiteScore 0.55
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.248 SNIP 0.476
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.22 SNIP 0.377
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.214 SNIP 0.578
The angle of attack of the body of common bream while swimming at different speeds in a flume tank

General information
State: Published
Organisations: Section for Freshwater Fisheries Ecology, National Institute of Aquatic Resources
Authors: Svendsen, J. C. (Intern), Koed, A. (Intern), Lucas, M. (Ekstern)
Pages: 572-577
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 66
Issue number: 2
ISSN (Print): 0022-1112
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.93 SNIP 1.035 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.895 SNIP 0.946 CiteScore 1.66
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
Factors influencing the spawning migration of female anadromous brown trout

Radio telemetry was employed to study movements of adult female anadromous brown trout Salmo trutta (sea trout) during upstream spawning migration and following spawning in a stream with tributaries. Sea trout were monitored by manual tracking and by automatic listening stations. The latter suggested that initiation of upstream migration was positively correlated with stream discharge. Individual sea trout performed repeated upstream migration 'initiations' (visits) to areas where they were detected by the automatic listening stations. The first and subsequent upstream migration 'initiations' occurred under conditions of similar water temperature and stream discharge. Manual tracking indicated that in the pre-spawning state, the distance migrated over 3 days was positively correlated with stream discharge and water temperature, whereas in the post-spawning state, the total distance migrated was not correlated with any of these two environmental variables. (C) 2004 The Fisheries Society of the British Isles.
Intra-school positional preference and reduced tail beat frequency in trailing positions in schooling roach under experimental conditions

General information
State: Published
Organisations: University of Copenhagen
Authors: Svendsen, J. C. (Intern), Skov, J. (Ekstern), Bildsøe, M. (Ekstern), Steffensen, J. (Ekstern)
Pages: 834-846
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Fish Biology
Volume: 62
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Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.57 SJR 0.741 SNIP 0.882
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.951 SNIP 0.935 CiteScore 1.64
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.944 SNIP 0.934 CiteScore 1.76
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.049 SNIP 1.118 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.93 SNIP 1.035 CiteScore 1.88
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.895 SNIP 0.946 CiteScore 1.66
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.774 SNIP 0.834
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.773 SNIP 0.891
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.883 SNIP 0.968
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.996 SNIP 1.06
Web of Science (2007): Indexed yes
Ørredyngel dræber ørredyngel

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology
Authors: Svendsen, J. C. (Intern), Sivebæk, F. (Intern)
Pages: 68-69
Publication date: 2002
Main Research Area: Technical/natural sciences

Publication Information
Journal: Sportsfiskeren
Volume: 77
Original language: Danish
Source: orbit
Source-ID: 227595
Publication: Research › Journal article – Annual report year: 2002

Projects:

Forbedring af forvaltningsgrundlaget for bestande i det rekreative fiskeri (39370)
National Institute of Aquatic Resources
Section for Monitoring and Data
Section for Ecosystem based Marine Management
Section for Freshwater Fisheries Ecology
Institute Management
Period: 14/07/2016 → 14/07/2018
Number of participants: 16
Acronym: REKREA
Project participant:
Olesen, Hans Jakob (Intern)
Storr-Paulsen, Marie (Intern)
Støttrup, Josianne Gatt (Intern)
Skov, Christian (Intern)
Christoffersen, Mads (Intern)
The aim of the project is to map fish habitats to improve data and information for Maritime Spatial Planning. The project focuses on mapping the habitats for 9 commercially important fish species and one invertebrate species in the inner Danish waters. Within the project methods will be developed to map habitats in data-poor as well as data-rich areas. Data derived from different sources; surveys, fisheries, citizen science will be used and combined with information derived from fisher interviews. The mapping will include coastal habitats to provide the basis for advice on management of coastal fish nursery areas.

This project is coordinated by DTU Aqua. The project is funded by the Ministry of Environment and Food of Denmark and the European Maritime and Fisheries Fund (EMFF).

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
University of Copenhagen
Period: 01/03/2016 → 28/02/2018
Number of participants: 7
Research areas: Coastal Ecology & Ecosystem based Marine Management

Coastal mussel banks: The importance for the fish fauna and possibilities for habitat restoration (MusFisk) (39133)
Coastal mussel banks are commonly assumed to be good areas for recreational fishing, but few quantitative studies have investigated how fish abundance and diversity covary with mussel coverage. In many Danish coastal waters, mussel coverage is reduced compared to historic records, but the impact of the reduction on coastal fisheries remains largely unknown.
This project investigates fish abundance and diversity in various coastal habitats to predict possible effects of mussel bank restoration projects. Because it is increasingly recognized that restoration of coastal habitats support both pelagic and benthic fisheries, this study hypothesized that mussel banks may provide important shelter and foraging habitats for various trophic levels of fish. Covering different habitats, catch per unit effort (CPUE) was quantified using fyke nets, and fish abundance and behaviours were measured using stationary underwater video cameras. These studies revealed that blue mussel (Mytilus edulis) banks support fish abundance and diversity comparable to areas covered by eel grass (Zostera marina), indicating that mussel bank restoration projects could benefit fisheries in a fashion similar to eel grass habitats. Moreover, fish abundance, but not diversity, differed between mussel banks exposed to different current velocity regimes, suggesting that mussel banks exposed to higher current velocities support higher fish abundances. These findings indicate that mussel bank restoration carried out in high current velocity regimes may provide the most favorable habitats for fish. Surprisingly, fish behaviours were similar in different current velocity regimes, suggesting comparable ecological function of the habitats.

Planned data collection in 2016 includes experimental manipulations of mussel coverage in laboratory studies where habitat preferences and stress levels (cortisol) will be examined in a number of fish species. These findings will be useful to test findings from the field studies and help predicting the effects of mussel bank restoration in coastal areas.

This project is coordinated by DTU Aqua.

The project is funded by the Danish Rod and Net Fishing License Funds.

National Institute of Aquatic Resources

Section for Ecosystem based Marine Management
Period: 01/01/2014 → 31/12/2016
Number of participants: 4
Research areas: Coastal Ecology & Oceanography
Project participant:
Støttrup, Josianne Gatt (Intern)
Mariani, Patrizio (Intern)
Project Coordinator:
Svendsen, Jon Christian (Intern)
Stenberg, Claus (Intern)

Behaviour of lake-dwelling fish

National Institute of Aquatic Resources
Period: 01/12/2008 → 19/09/2012
Number of participants: 10
Phd Student:
Baktoft, Henrik (Intern)
Supervisor:
Aarestrup, Kim (Intern)
Berg, Søren (Intern)
Koed, Anders (Intern)
Skov, Christian (Intern)
Svendsen, Jon Christian (Intern)
Main Supervisor:
Jacobsen, Lene (Intern)
Examiner:
Rasmussen, Gorm (Intern)
Cooke, Steven J. (Ekstern)
Lucas, Martyn Charles (Ekstern)

Financing sources
Source: Internal funding (public)
Name of research programme: 1/3 FUU, 1/3 inst 1/3 Andet
Project: PhD