
Electroshocking

Electrofishing

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There are three types of electrofishers: backpack models, towed barge models, and boat mounted models, sometimes called a **stunboat**. All models rely on two electrodes which deliver current into the water to stun fish. The current runs from the anode to the cathode, creating a high-voltage potential. When a fish encounters a large enough potential gradient, it becomes affected by the electricity. Usually pulsed DC current is applied, which causes galvanotaxis in the fish. Galvanotaxis is uncontrolled muscular convulsion that results in the fish swimming toward the anode. At least two people are required for an effective electrofishing crew: one to operate the anode, and the other to catch the stunned fish with a dip net.

Backpack electrofisher generators are either battery or gas powered. They employ a transformer to pulse the current before it is delivered into the water. The anode is located at the end of a long, 2 meter pole and is usually in the form of a ring. The cathode is a long, 3 meter braided steel cable that trails behind the operator. The electrofisher is operated by a deadman's switch on the anode pole. There are a number of safety features built into newer backpack models, such as audible speakers that sound when the unit is operating, tilt-switches that incapacitate the electrofisher if the backpack is tilted more than 45 degrees, and quick-release straps to enable the user to quickly remove the electrofisher in the event of some emergency.

Towed barge electrofishers operate similarly to backpack electrofishers, with the exception that the generator is located on a floating barge instead of on a backpack. Often the barge can be left stationary on the shore and longer cathodes and anodes allow the crew to sample large areas. Barge electrofishers often employ gas-powered generators since a user does not have to carry the extra weight on his or her back.

When boat electrofishing, the boat itself is the cathode, and the anode(s) are generally mounted off the bow. The stunned fish swim toward the anode, where they are caught alive using a dip net.^[1]

A relatively new fishing technique is electrofishing (electric fishing). Electrofishing is used primarily in freshwater by zoologists as a sampling technique. Typical uses include collecting fish for stream classification surveys such as Index of Biotic Integrity surveys, to capture brood stock for hatcheries, or to collect representative samples from fish populations for the estimation of population size and structure. Most commonly, pulses of direct current (DC) are used to induce capture-prone behavior in fish. For example, with the apparatus correctly tuned as to pulse speed, voltage gradient and current, fish will exhibit galvanotaxis; they turn into the electric field and swim toward the apparatus.

The effectiveness of electrofishing is influenced by a variety of biological, technical, logistical, and environmental factors. The catch is often selectively biased as to fish size and species composition. When using pulsed DC for fishing, the pulse rate and the intensity of the electric field strongly influence the size and nature of the catch. The conductivity of the water, which is determined by the concentration in the water of charge carriers (ions), influences the shape and extent of the electric field in the water and thus affects the field's ability to induce capture-prone behavior in the fish.

Notes

^ "Electro-Fishing Summary". September 2003. <http://www.petitcodiac.com/eFishing/electroFishing.htm>. Retrieved 2007-08-09.

References

Helfman, Gene S (2007) *Fish Conservation: A Guide to Understanding and Restoring Global Aquatic Biodiversity and Fishery Resources* Island Press, pp. 452–453. ISBN 9781559635967

Hill, David; Fasham, Matthew; Tucker, Graham; Shewry, Michael and Shaw, Philip (2005) *Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring* Cambridge University Press, pp. 383–385. ISBN 9780521823685

[Fishery Research - Electrofishing National Park Service, US Department of the Interior. Retrieved 2 October 2008.](#)

U.S. Fish and Wildlife Service (2004) *Electrofishing*

Electroshocking Survey Results Eldorado National Forest

Ranger District: _____ Date: _____

Location description: _____

Distance (m)	Avg		Species	Size (cm)	Distance (m)	Avg		Species	Size (cm)
	Width (m)	Depth (m)				Width (m)	Depth (m)		
51					76				
52					77				
53					78				
54					79				
55					80				
56					81				
57					82				
58					83				
59					84				
60					85				
61					86				
62					87				
63					88				
64					89				
65					90				
66					91				
67					92				
68					93				
69					94				
70					95				
71					96				
72					97				
73					98				
74					99				
75					100				

Comments: _____

Photos

No.	Description
_____	_____
_____	_____
_____	_____

Calculations

Page 1 total number of fish _____ Page 1 survey reach length _____ m
 Page 2 total number of fish _____ Page 2 survey reach length _____ m
 Total number of fish _____ Total survey reach length _____ m

Total number of fish X 100 divided by total length of survey reach (m) = number of fish per 100 m

_____ X 100 / _____ = _____ / 100 m

Species totals ONMY _____ SATR _____ SAFO _____
 Other incl. herp (fill in) _____

*Size = fork length

Electroshocking Survey Results Eldorado National Forest

Location description: _____

Date: _____

	Distance (m)	Avg Width (m)	Avg Depth (m)	Species	Size (cm)		Distance (m)	Avg Width (m)	Avg Depth (m)	Species	Size (cm)
101						151					
102						152					
103						153					
104						154					
105						155					
106						156					
107						157					
108						158					
109						159					
110						160					
111						161					
112						162					
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115						165					
116						166					
117						167					
118						168					
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137						187					
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146						196					
147						197					
148						198					
149						199					
150						200					

Electroshocking Survey Results Eldorado National Forest

Location description: _____

Date: _____

	Distance (m)	Avg Width (m)	Avg Depth (m)	Species	Size (cm)		Distance (m)	Avg Width (m)	Avg Depth (m)	Species	Size (cm)
201						251					
202						252					
203						253					
204						254					
205						255					
206						256					
207						257					
208						258					
209						259					
210						260					
211						261					
212						262					
213						263					
214						264					
215						265					
216						266					
217						267					
218						268					
219						269					
220						270					
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244						294					
245						295					
246						296					
247						297					
248						298					
249						299					
250						300					

Electroshocking Survey Results Eldorado National Forest

Location description: _____

Date: _____

Calculations

Page 1 total number of fish _____	Page 1 survey reach length _____ m
Page 2 total number of fish _____	Page 2 survey reach length _____ m
Page 3 total number of fish _____	Page 3 survey reach length _____ m
Page 4 total number of fish _____	Page 4 survey reach length _____ m
Total number of fish _____	Total survey reach length _____ m

Total number of fish X 100 divided by total length of survey reach (m) = number of fish per 100 m

_____ X 100 / _____ = _____ / 100 m

Species totals ONMY _____

SATR _____

SAFO _____

Other incl herp (fill in) _____