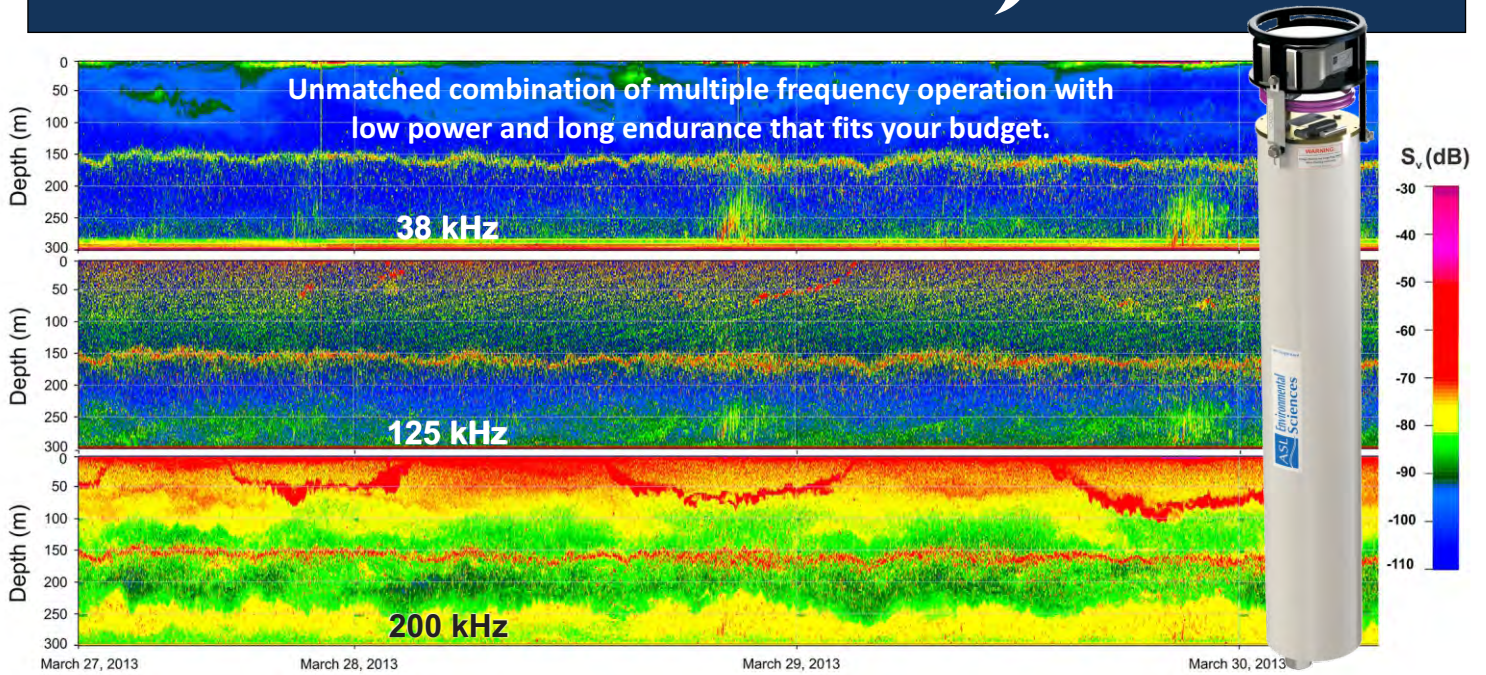


# Acoustic Zooplankton Fish Profiler™

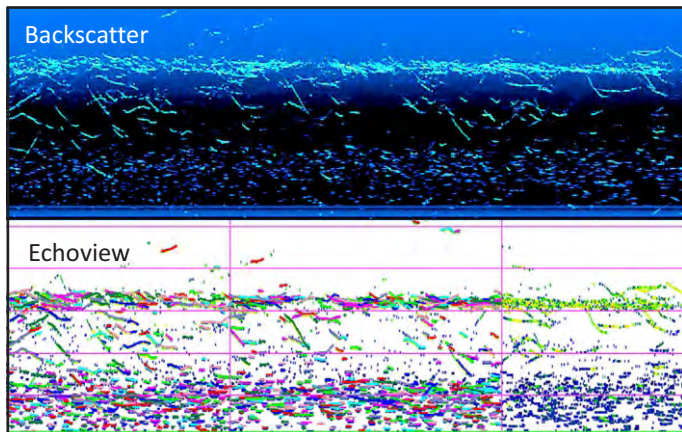


## Applications

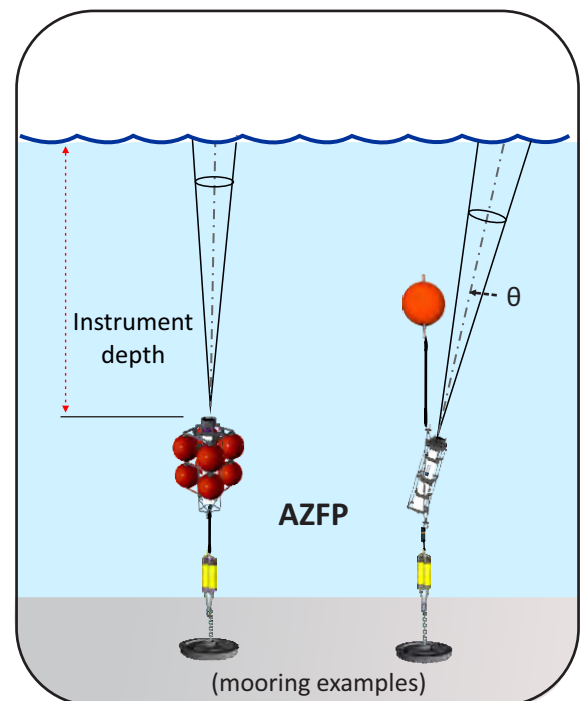
The Acoustic Zooplankton Fish Profiler™ can monitor the presence and abundance of zooplankton and fish within the water column by measuring acoustic backscatter returns with ultrasonic frequencies. Other sonar targets realized from the sonar backscatter data include bubbles and suspended sediments.

## Features

- Can collect data continuously for periods of up to one year at high temporal and spatial resolution.
- Available with up to four frequencies in a single transducer housing.
- Can be operated in bottom-mounted, upward looking mode or in downward looking mode from a buoy.



Backscatter data showing fish arches (Echoview software)



### AZFP Specifications

- Deployment phases (12 max) by date or duration (with repeat & sleep)
- Configurable ping rate up to 1 Hz (depends on frequencies and range)
- A/D Digitization rate: 64,000, 40,000 or 20,000 Hz
- User selectable pulse length: 100 to 1000 microseconds
- Range lockout to ignore near targets
- Range averaging into bins (minimum bin size is 0.011m) and ping averaging over time
- Anodized aluminum underwater pressure housing rated to 600 m

#### TILT SENSOR

Range  $\pm 45^\circ$  with an accuracy of  $\pm 3^\circ$

#### DATA STORAGE

16 GB CompactFlash

#### SIZE

Pressure case: 170mm diameter x 1000mm long

#### POWER

Example with standard battery pack: ping for 150 days with 4 frequencies every 2 seconds over a 100 m range)

#### ACOUSTIC PERFORMANCE of the AZFP

Estimated Minimum Detectable Volume Backscatter Strength (dB)

Frequency (kHz)	Nominal Source Level(dB)	Nominal -3dB Beam Angle	1m	2m	5m	10m	20m	50m	100m	200m	300m	500m
38	208	12	-136	-130	-122	-116	-110	-101	-94	-87	-82	-74
67.5	205	10	-131	-125	-117	-110	-104	-95	-87	-77	-70	-58
125	210	8	-136	-129	-121	-115	-108	-98	-88	-75	-64	-
200	210	8	-130	-124	-115	-109	-102	-91	-79	-63	-48	-
333	211	8	-121	-115	-106	-100	-92	-79	-65	-43	-	-
455	210	7	-116	-110	-101	-94	-86	-71	-54	-	-	-
769	210	7	-106	-99	-90	-81	-71	-48	-	-	-	-
2000*	212	7	-80	-71	-55	-	-	-	-	-	-	-

#### NOTES

- Sidelobes are -15 dB or better
- Limits of detectable volume backscatter strength are estimates; individual units may vary by +/- 3 to 4 dB
- Receiver dynamic range is >85 dB each channel (\* receiver dynamic range is 75 dB for 2000 kHz)
- The above specifications are subject to change without prior notice
- Volume backscatter is calibrated to +/- 1dB, Sv resolution is +/-0.1 dB

#### SOFTWARE

- Includes AZFPLink to configure the instrument and plot hourly single frequency echograms
- AZFP's raw data format is compatible with Echoview and Sonar5
- AZFP's comma delimited ASCII format (CSV) is compatible with Matlab and other software.

#### OPTIONAL FEATURES

- 32 GB Compact Flash
- 1000 m rated versions
- RS422 serial communication with optical isolation for real-time applications
- Bottom frames
- Compact AZFP packages for Mid-ocean floats, gliders and AUVs and towed bodies
- Short pressure case without batteries
- Taut-line mooring frame
- Pressure Sensor
- Tilt pinger for use with bottom frame
- Deployment and recovery services
- Deepwater versions available up to 6000 m