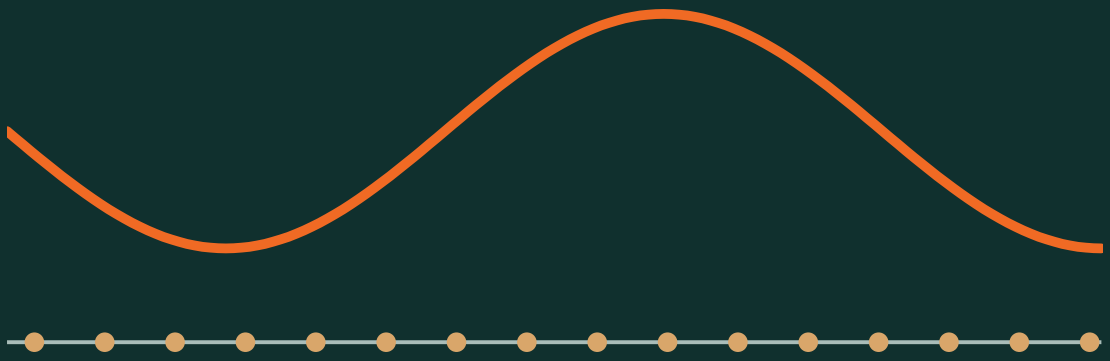
Fly Findr

HOW TROUT SMELL, TASTE, HEAR *and feel the water*

Smell, taste, alarm cues, hearing, voices, wading, boat noise and the lateral line. Every claim is tied to a published study, and where no study exists this guide says so.



380 Hz
Atlantic salmon heard only lower tones

200 Hz
Top of the lateral line range in fish

0
Studies found that test human scent on flies

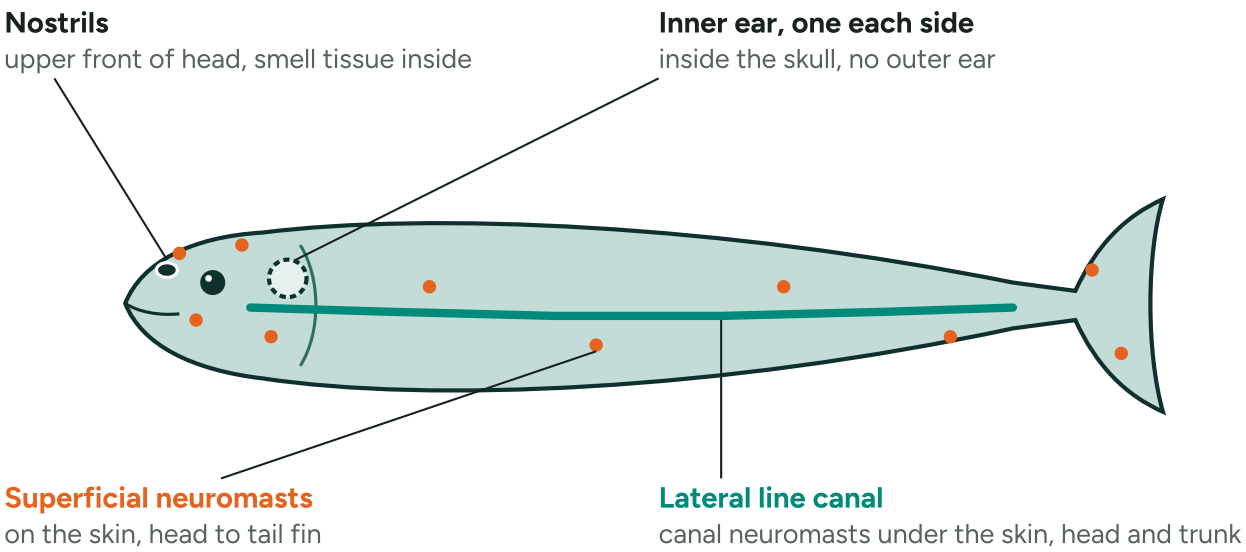
By Cade Bagley · Part 2 of How a trout senses the world

SMELL *and taste*

Olfaction is the sense of smell. A trout's nasal cavities sit on the upper front of the head. Across bony fishes, amino acids are the main food odors, detected at a millionth to a hundred-millionth of a mole per litre.

Where a trout senses smell, sound and water movement

A plain side view. Positions are schematic and not to scale



Olivares and Schmachtenberg 2019 · Popper and Hawkins 2019 · Brown and others 2013 · Bleckmann and Zelick 2009

What the studies found

- One study: rainbow trout noses responded to lactic acid, pyruvic acid and two B vitamins at nanomolar levels (nerve signals, not behavior).
- One lab study: trained trout with their smell organs removed still fed fully on sight.
- One lab study: trout found only some chemicals palatable. Aldehydes and most amines had no effect.

Human scent

- No study tested scent, sunscreen, repellent or fuel on flies or catch.
- One 1956 abstract: L-serine from human skin repelled migrating salmon at extreme dilution.

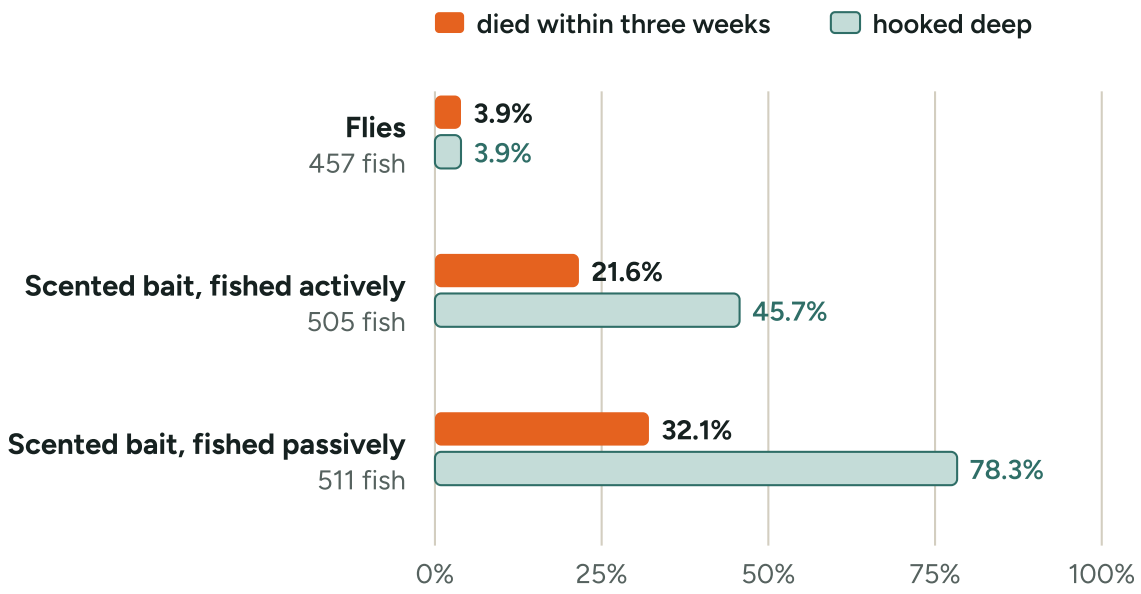
> **Inference, not tested on flies or catch.** A trout that cannot smell a fly can still take it if it can see it.

SCENT, BAIT *and alarm cues*

No study has compared catch on scented and unscented flies. The one angling study with scented artificial bait measured death after release, not catch.

Rainbow trout deaths after release, by what they were caught on

Share of fish that died within three weeks and share hooked deep in the gills or throat



Schisler and Bergersen 1996 · 1,473 rainbow trout, five replicate experiments

Reading the chart

- Most of the gap came from fish hooked in the gill arches or deep in the throat.
- Scent cannot be separated from bait type and hook position.

Alarm cues

- Skin extract from trout cut swimming and feeding in lab juveniles.
- Brook, brown and rainbow trout reacted to each other's alarm cues, most to their own.
- Nothing tested fish released by anglers.

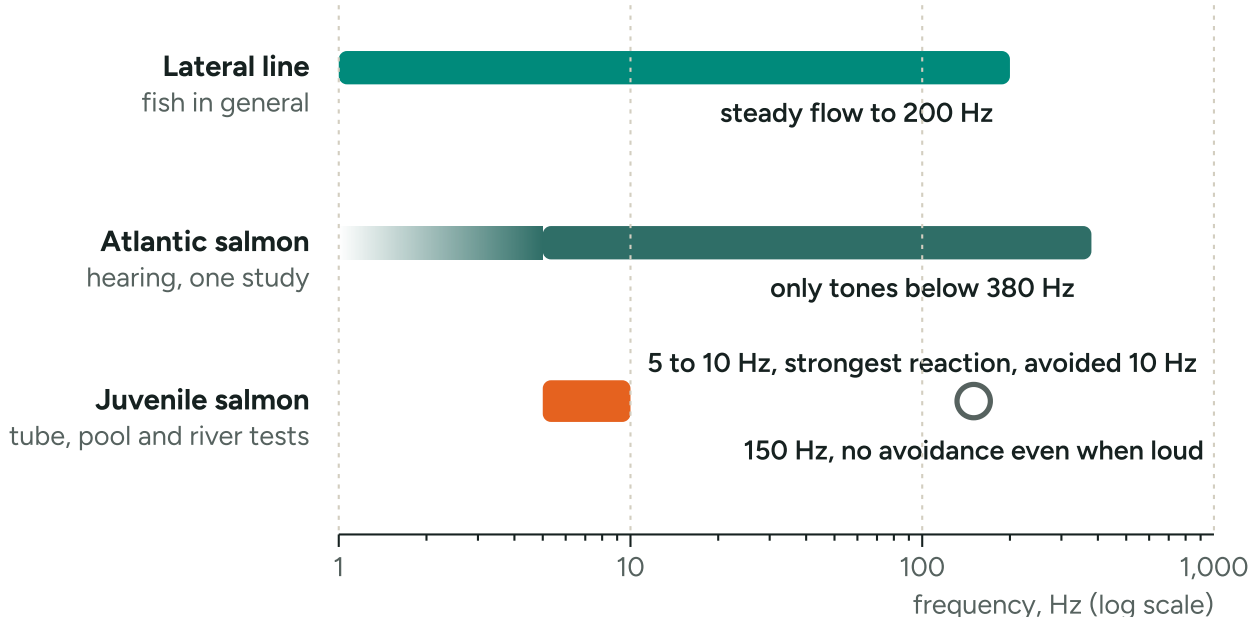
Inference, not tested on flies or catch. Nothing here shows that adding scent to a fly would catch more trout.

HEARING *and the lateral line*

Particle motion is the back-and-forth movement of water as sound passes. Hertz (Hz) counts vibrations per second. Salmon and trout sense particle motion over a narrow band of low frequencies.

The low pitches salmon and the lateral line respond to

Frequency in hertz on a log scale, from studies of Atlantic salmon and of fish in general



Hawkins and Johnstone 1978 · Knudsen and others 1992, 1994 · Brown and others 2013

Voices, wading and boats

- One 1978 salmon study concluded sound from the air is unlikely to be detected, but sound through the bottom could be.
- Caged brown trout near pile driving showed little reaction.
- No study of trout and boat noise in fresh water was found.

Lateral line

- Neuromasts sense water flow and vibration.
- Rainbow trout used canal neuromasts to locate artificial prey, and both kinds to catch prey in the dark.
- No study gives a detection distance or used a fly.

Inference, not tested on flies or catch. Talking on the bank is unlikely to reach a trout. Vibration through the bed or bank could, though no study found tested footsteps or wading.

FISHING LORE *against the studies*

What anglers say	What the studies show	Verdict
Human scent, sunscreen, repellent or fuel on a fly puts trout off	No study tested any of them on flies, lures or catch. One 1956 abstract found L-serine from human skin repelled migrating salmon, and trout noses respond to some skin-odor compounds.	No study
Scented flies and gels catch more trout	No catch-rate study was found. The one scented-bait study measured death after release, and scent was mixed up with bait type.	No study
Trout need to smell a fly to take it	Trout with their smell organs removed still fed fully on sight in one lab study.	Contradicted by one study
Trout hear you talking on the bank	No trout test of voices. One salmon study concluded sound from the air is unlikely to be detected.	No trout study, one salmon study points the other way
Footsteps and heavy wading spook trout	No study measured it. One salmon study concluded salmon are sensitive to sound through the bottom.	No study
Boat motors put trout off feeding	Only juvenile salmon in sea pens, caged brown trout near pile driving that showed little reaction, and a review calling the freshwater effect unclear.	No freshwater trout study
Trout feel a fly with the lateral line from far away	Rainbow trout use it to find prey in the dark, but no study gave a distance or used flies.	No distance found
Trout hold or reject a fly by taste for a set time	Taste work covers single chemicals only. Nothing measured hold time.	No study
A released fish leaves alarm scent that spooks the pool	Injured-trout extract and urea cut feeding or raised alarm behavior in lab juveniles. Nothing tested released fish.	No study

Part 1 of the series, How trout see and what light does under water, is at flyfindr.co/blog/how-trout-see.

References. Bleckmann 2009; Brown 2013; Brown 2012; Brown 1997; Bui 2013; Coombs 2020; Doving 1980; Giaquinto 2008; Hawkins 1978; Idler 1956; Jones 1990; Knudsen 1992; Knudsen 1994; Liao 2006; Mickle 2017; Mirza 2001; Montgomery 2002; Montgomery 2003; Mueller 1999; Nedwell 2006; Olivares 2019; Popper 2019; Schisler 1996; Valdes 2015; Valentincic 1997; van der Knaap 2021. Full citations and links at flyfindr.co/blog/how-trout-smell-hear-feel.