BAROMETRIC PRESSURE AND BASS

by Ralph Manns

One of the most persistent myths in fishing is that barometric pressure controls the activity of bass and other gamefish. Although many researchers have tried, scientific studies have been unable to demonstrate that such a relationship exists. Every scientific report we've seen, in which barometric pressure was studied, reached a similar conclusion: no direct relationship is evident.

This consistency results mainly because no way has been found to isolate barometric pressure influences from simultaneous weather phenomena. We need observations of fish behavior when air pressure changes are the only variable. But significant barometric changes are rare without accompanying changes in wind, temperature, and sky conditions.

The typical weather front is preceded by dropping barometric pressure and increasing cloudiness, while postfrontal conditions usually are clear skies, bright sunlight, and higher air pressure. Although barometric pressure might directly trigger gamefish responses, no mechanism for detecting these changes has been seriously postulated by scientists.

Field Studies

Years ago, I studied bass behavior through electronic tracking and underwater observation. My team monitored barometric pressure among more than 100 variables we recorded. As in previous studies, we observed no obvious relationship between pressure readings or the nature of pressure changes and the behavior of largemouth and Guadalupe bass in Lake Travis, Texas. Nevertheless, some of our findings provide insight into the possible relationship of barometric pressure, weather, and bass behavior.

When the barometer reading was less than 29.30 (low), about 27 percent of the bass we observed fed on the surface, away from the shoreline. This percentage was greater than the 18 percent observed feeding when the barometer was higher than 29.70 (high). But when we merged the observations of apparent feeding reported by divers and trackers with the surface sightings, we found 36 percent of the observed bass were apparently feeding when the barometer reading was high, as compared to 30 percent when the barometer reading was low.

When we evaluated actual strikes and refusals of lures presented to bass observed by trackers and divers, we found 52 percent of the bass struck lures during lows compared to only 39 percent during highs. But the vast majority of our strikes took place when the barometer reading was neither particularly high nor low (between 29.30 and 29.70). High or low barometric readings, by themselves, were not consistently indicative of bass activity or catchability.

We also looked at the possibility that changes in barometric pressure were more important than absolute pressure. When the barometer was falling slowly (less than 0.21 inch per hour), 65 percent of the bass that were presented lures struck, while 35 percent did not. On a slowly rising barometer, only 30 percent struck, while 70 percent didn't. But our fishing sample was small. In our larger sample of tracked and observed bass, 29 percent fed offshore on a slowly rising barometer, while 24 percent fed offshore on both a slowly falling and a steady barometer.

The data are confounded by other factors, however. For example, 32 percent of feeding events occurred on solunar majors, only 20 percent on minors, and 27 percent between majors and minors. So solunar influence and other factors may have affected the barometric data. These results don't necessarily mean that falling barometers increase fishing success or that rising barometers increase offshore activity.

Schooling and aggregating behaviors are apparently associated with increased feeding and vulnerability to angling. When the barometer was high, 54 percent of the bass observed were aggregated (groups of 3 to 15), 12 percent were schooled (moving synchronously), while 44 percent were alone or paired. When the barometer was low, 57 percent were aggregated, 5 percent were schooling, and 38 percent were single or paired.

When the barometer was rising slowly, 64 percent of observed bass were aggregated, none were schooling, and 36 percent were paired or alone. When barometric pressure was

falling slowly, 53 percent were aggregated, 20 percent were schooled, and 28 percent were alone or paired. If it weren't for other factors affecting bass activity, the data might suggest that a falling barometer, approaching storm, increasing cloudiness, or a combination of these and other factors increased feeding activity.

Use of Cover

How about cover? With a steady barometer, 34 percent of observed bass were within 1.5 feet of cover, 31 percent more than 6 feet from cover, and the remaining 35 percent were in between. A slowly falling barometer found 30 percent in or close to cover, 25 percent away from cover, and 45 percent in between.

During a slowly rising barometer, 30 percent held close to cover, 30 percent away from cover, and 40 percent in between. Barometric pressure changes didn't provide a positive clue to bass location relative to cover. The data did, however, demonstrate that most bass are away from cover and suspended most of the time in a clear wood-deprived grass-free highland reservoir like Lake Travis.

We also monitored the location, movement, and apparent feeding of bass under various cloud conditions. Under overcast skies, bass were observed farther than 46 feet from shorelines in 23 percent of cases, while 19 percent were offshore under broken skies (50-80 percent sky coverage), 33 percent under scattered clouds, and 32 percent under clear skies.

Our bass apparently found little difference between partly cloudy and clear daytime skies, but most likely moved offshore under bright sunlight. Feeding was seen under overcast (42%), broken (23%), scattered (24%), and clear skies (28%). While overcast skies were clearly associated with increased feeding, clouds, even a broken ceiling, had little effect.

The low light of heavy cloud cover apparently makes preyfish more vulnerable to predators and encourages bass activity. Surprisingly, we documented slightly more feeding activity under totally clear skies than under partial clouds. The maximum brightness of clear skies, which creates optimum feeding opportunities for plankton-eating prey, likely encourages maximum preyfish activity, which in turn may stimulate increased predation.

When we analyzed the relationships between weather trends and bass proximity to cover, no trends appeared. Virtually the same percent held close to cover before and after a frontal passage, though more were found in cover after the front passed. Bass behavior seems determined by many variables, with no single factor like barometer reading, barometric change, sky condition, wind speed, wind direction, or even prey availability compelling bass to be active or inactive.

We monitored all of these variables and many others without finding any single factor that was a reliable predictor of feeding or striking activity by black bass. At any given time, some bass were inactive, some neutral, and some active. Small catches result when

the percentage of inactive bass increases, while larger catches result when a few more fish decide, for whatever reason, to actively seek food.

Apparently, the only sure biological fact is that adult bass that have recently fed heavily and are digesting food tend to be inactive or neutral regardless of any environmental factor, including barometric conditions. The length of time since many of the bass in an area fed heavily and the time required to digest that meal are perhaps the most important clues to when a significant proportion of any bass population will next become active.

We found it interesting that in Texas in midsummer we experienced daily barometric pressure changes, due to the sun's warming effects, that sometimes exceeded pressure changes associated with fronts. Each day, as the sun warmed the land and water, pressure dropped. Each morning, pressure was high due to the all-night cooling.

Mornings tended to be clear or with short-lived low clouds, while afternoons generally brought increasing high cloudiness. We didn't find bass more active or less active in typical morning highs or late afternoon lows. Yet frontal passages and associated conditions, including overcast skies, wind, rain, and temperature changes, often seemed to turn bass on. Apparently, heavy cloud cover and low-light conditions affected bass activity, not air pressure changes alone.

Effects of Air Pressure On Fish

Air pressure and associated temperatures and moisture contents are major factors creating clouds and weather. Changes in pressure often are indicative of coming changes in weather and sky conditions. But when the possibility that air pressure alone controls fish behavior is considered, distinct limitations appear. A fish with a gas bladder needs only to swim up or down a foot or two to experience as great or greater a pressure change than that created by all but the largest natural pressure changes—typhoons and hurricanes.

A fish might notice that it's floating or sinking a few inches in response to a change in air pressure, but it experiences larger pressure changes as it changes depth a few feet while hunting prey or moving to a new location. Black bass and other fish with closed gas bladders use their bladders to achieve neutral density and hold at constant depths. This weightlessness conserves energy by reducing their need to swim.

If air pressure or depth changes, a fish with a gas bladder slowly and naturally adapts bladder pressure to reestablish equilibrium. Depth adjustment of a few inches easily re-establishes balance and makes it unlikely that bass sense pressure changes for long periods. Depth changes likely override the perception of small changes in air pressure.

Biologists never have identified physical mechanisms or sensory systems that would specifically allow fish suspended at neutral density to sense relatively small changes in water pressure associated with air pressure shifts. But biologists have long postulated that clouds, waves, and changes in lighting affect hunting success by predators, by favoring species with eyes sensitive to low light levels.

We await any scientific information or interpretation that better explains the relationship between gamefish behavior and changes in air pressure, when isolated from the confounding effects of weather conditions. Until a biologically reasonable mechanism is proposed, we think it's more reasonable and likely more accurate to consider weather and sky conditions rather than barometric pressure in explaining fish activity and inactivity.

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