

In the American genera of *Cyprinidae* the number of anal rays is usually fixed with two or three for any genus. In the group of fishes under consideration the number varies within 12.

Now a word as to the charts. The vertical lines on plates 7 and 8 represent number of anal rays, beginning on the left with the lowest number observed and ending on the right with the highest. A certain height (100 mm.) is taken to represent 100 per cent. The height of the curve on each vertical line is made to represent per cent of specimens having that particular number of rays expressed in millimeter of height.

In the table below the numbers in the headings represent the numbers of anal rays found in specimens of *Richardsonius*, and opposite each locality is given the number of specimens from that locality possessing the given number of rays. Thus from Idaho Falls, 2 specimens had 12½ rays in the anal, 14 specimens had 13½ rays, and 1 specimen had 14½ rays. At the bottom is given the nearest per cent that the sum of given column bears to all the (300) specimens examined.

Locality	Elevation.	Number of rays in the anal.													
		11½	12½	13½	14½	15½	16½	17½	18½	19½	20½	21½	22½	23½	24½
Provo River (<i>montanus</i>)	Feet.	20	12												
<i>Columbia Basin.</i>															
Idaho Falls (<i>hydrophlox</i>)	4,712	2	14	4											
La Grande	2,785			2	6	11	4								
Golden	2,550			1	7	5	4	1							
Caldwell	2,372			1	2	6	7	8	7	2	1				
Revelstoke	1,475					1									
Umatilla	300						1	5	1	2	1				
<i>Fraser Basin.</i>															
Griffin Lake	1,900		3	2	7	3	1								
Sicamous	1,300			1	3	13	28	8	5						
Kamloops	1,158									1	1				
Mission	1					2	7	13	25	18	8	2	2	2	
Per cents		9	9	4	8	13	17	11	12	8	4	1	1	1	

Taking all the specimens recorded (300), adding the columns, and representing variations in the anal rays in a curve,* we find that there is a certain number of orders or peaks. Each of these represents a distinct species or variety. The extent of intergradation can be measured by the depth of the valley between any two peaks. In well-separated species the slopes of the two peaks would not meet. Now it is noticed that the depth of the valley between the two right peaks is quite shallow, and, in fact, I find the variation almost perfect between *L. balteatus* and *lateralis*, the two varieties represented by these two peaks. The valley between the middle and the two on the left is deep. In other words, *L. lateralis* is well separated in character under consideration from *L. hydrophlox* and *montanus*, the species represented by the peak to the left. On the other hand, the latter species merge into each other perfectly in the number of rays.

I have represented in a double curve or composite photograph, as it were

* By an oversight this curve has been omitted. The height of the curve in millimeters at points is indicated by the numbers at the bottom of the table. With these the curve can be constructed by using the lines of plate 7 or plate 8.