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- Decision tree for fish species classification based on morphological and geographical data. The tree splits on various thresholds for Latitude (Lat), Longitude (Lon), and Length. The final classification is based on the number of species (n) in each group.
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graph TD
    Root[ ] --- L1[ ]
    L1 --- L1L[Lat < 28.49]
    L1 --- L1R[Lat >= 28.49]
    
    L1L --- L2L[ ]
    L1L --- L2R[ ]
    L2L --- L2L1[Lon >= -111.4]
    L2L --- L2L2[Lon < -111.4]
    L2R --- L2R1[Length >= 15.35]
    L2R --- L2R2[Length < 15.35]
    
    L2L1 --- L3L1[ ]
    L2L1 --- L3L2[ ]
    L3L1 --- L3L1L[Length >= 22.35]
    L3L1 --- L3L1R[Length < 22.35]
    L3L2 --- L3L2L[Length >= 20.45]
    L3L2 --- L3L2R[Length < 20.45]
    
    L3L1L --- L4L1[ ]
    L3L1L --- L4L2[ ]
    L4L1 --- L4L1L[Length < 18.35]
    L4L1 --- L4L1R[Length >= 18.35]
    L4L2 --- L4L2L[Length >= 19.65]
    L4L2 --- L4L2R[Length < 19.65]
    
    L4L1L --- L5L1[v_crustacean]
    L4L1L --- L5L2[v_crustacean]
    L4L1R --- L5L3[v_crustacean]
    L4L1R --- L5L4[v_crustacean]
    L4L2L --- L5L5[v_crustacean]
    L4L2L --- L5L6[v_crustacean]
    L4L2R --- L5L7[v_crustacean]
    L4L2R --- L5L8[v_crustacean]
    
    L5L1 --- L6L1[8]
    L5L2 --- L6L2[18]
    L5L3 --- L6L3[76]
    L5L4 --- L6L4[77]
    L5L5 --- L6L5[40]
    L5L6 --- L6L6[82]
    L5L7 --- L6L7[39]
    L5L8 --- L6L8[166]
    
    L3L2L --- L4L3[ ]
    L3L2L --- L4L4[ ]
    L4L3 --- L4L3L[Length >= 18.75]
    L4L3 --- L4L3R[Length < 18.75]
    L4L4 --- L4L4L[Length >= 19.45]
    L4L4 --- L4L4R[Length < 19.45]
    
    L4L3L --- L5L9[v_crustacean]
    L4L3L --- L5L10[v_crustacean]
    L4L3R --- L5L11[v_crustacean]
    L4L3R --- L5L12[v_crustacean]
    L4L4L --- L5L13[v_crustacean]
    L4L4L --- L5L14[v_crustacean]
    L4L4R --- L5L15[v_crustacean]
    L4L4R --- L5L16[v_crustacean]
    
    L5L9 --- L6L9[76]
    L5L10 --- L6L10[77]
    L5L11 --- L6L11[166]
    L5L12 --- L6L12[167]
    L5L13 --- L6L13[166]
    L5L14 --- L6L14[167]
    L5L15 --- L6L15[166]
    L5L16 --- L6L16[167]
    
    L2R1 --- L3R1[ ]
    L2R1 --- L3R2[ ]
    L3R1 --- L3R1L[Length < 16.75]
    L3R1 --- L3R1R[Length >= 16.75]
    L3R2 --- L3R2L[Length < 16.75]
    L3R2 --- L3R2R[Length >= 16.75]
    
    L3R1L --- L4R1[v_crustacean]
    L3R1L --- L4R2[v_crustacean]
    L3R1R --- L4R3[v_crustacean]
    L3R1R --- L4R4[v_crustacean]
    L3R2L --- L4R5[v_crustacean]
    L3R2L --- L4R6[v_crustacean]
    L3R2R --- L4R7[v_crustacean]
    L3R2R --- L4R8[v_crustacean]
    
    L4R1 --- L5L17[12]
    L4R2 --- L5L18[13]
    L4R3 --- L5L19[7]
    L4R4 --- L5L20[7]
    L4R5 --- L5L21[12]
    L4R6 --- L5L22[13]
    L4R7 --- L5L23[7]
    L4R8 --- L5L24[7]
    
    L2R2 --- L3R3[ ]
    L2R2 --- L3R4[ ]
    L3R3 --- L3R3L[Length < 16.75]
    L3R3 --- L3R3R[Length >= 16.75]
    L3R4 --- L3R4L[Length < 16.75]
    L3R4 --- L3R4R[Length >= 16.75]
    
    L3R3L --- L4R9[v_crustacean]
    L3R3L --- L4R10[v_crustacean]
    L3R3R --- L4R11[v_crustacean]
    L3R3R --- L4R12[v_crustacean]
    L3R4L --- L4R13[v_crustacean]
    L3R4L --- L4R14[v_crustacean]
    L3R4R --- L4R15[v_crustacean]
    L3R4R --- L4R16[v_crustacean]
    
    L4R9 --- L5L25[12]
    L4R10 --- L5L26[13]
    L4R11 --- L5L27[7]
    L4R12 --- L5L28[7]
    L4R13 --- L5L29[12]
    L4R14 --- L5L30[13]
    L4R15 --- L5L31[7]
    L4R16 --- L5L32[7]
    
    L3R5[ ]
    L3R5 --- L3R5L[Length < 16.75]
    L3R5 --- L3R5R[Length >= 16.75]
    L3R5L --- L4R17[v_crustacean]
    L3R5L --- L4R18[v_crustacean]
    L3R5R --- L4R19[v_crustacean]
    L3R5R --- L4R20[v_crustacean]
    L4R17 --- L5L33[12]
    L4R18 --- L5L34[13]
    L4R19 --- L5L35[7]
    L4R20 --- L5L36[7]
  
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**Variable Importance**

